

**PREVALENCE OF UNDERNUTRITION AND ASSOCIATED FACTORS AMONG
ADOLESCENT STREET CHILDREN IN JIMMA TOWN, SOUTH WEST ETHIOPIA**

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Prevalence of Undernutrition and Associated Factors among Adolescent Street Children in Jimma Town, South West Ethiopia, 2019

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Abstract

Background: Undernutrition is the major health problem in developing countries and the whole world which mostly affects underprivileged populations. In Ethiopia there is no clear information about the health status in general and nutritional status in specific; like the prevalence and forms of undernutrition, their associated factors among adolescent street children. Understanding the magnitude and contributing factors for undernutrition helps to alleviate the problem through integrated formulation and implementation of policies and strategies.

Objective: This study assessed the prevalence of undernutrition and its associated factors among adolescent of street children in Jimma town from March 1-31, 2019.

Methods and materials: A community based cross sectional study was conducted among 312 street children from March 1st to 31st. Complete enumeration of participant was made after conducting preliminary survey and registering all available street children in all corners of the town. Self-administered structured questioner was used for data collection. We used Epi data version 3.1 for data entry and SPSS version 20 for statistical analysis. WHO Anthro plus software version 1.0.4 was used for computing standardized indicators of nutritional status. Independent variables with p-value ≤ 0.25 in bivariate analysis were included into multivariable logistic regression and variables with P-value < 0.05 in multivariable logistic regression were declared as statistically significant.

Results: Prevalence of thinness was 29.2% [95% C.I: 24%- 34.0%], and that of stunting was 30.4% [95% C.I; 24.6% - 35.3%]. Being female [AOR: 2.55, 95%C.I: 1.16- 5.63], Ever skipped one or more daily meal per day [AOR: 6.56, 95%C.I: 2.25- 19.15], Inadequate dietary diversity score [AOR: 1.86, 95%C.I: 1.05- 3.27] and using unprotected water source [AOR: 1.78, 95%C.I: 1.03- 3.05] were statistically significant factors for thinness whereas being in age group 15-18 [AOR: 5.78, 95%C.I: 3.20 -10.40] and ever used substance [AOR: 3.01, 95%C.I: 1.17 -7.77] were statistically significant factors for stunting among adolescent of street children.

Conclusion and recommendation: In this study, undernutrition, especially thinness and stunting was high among adolescent of street children and a range of factors were observed that results in undernutrition. Service provisions targeting nutritional supply, personal and environmental sanitations should be given to these street children through intersectoral collaboration.

Key Words- street children, undernutrition, off the street children, thinness, stunting

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Abbreviations and Acronyms

BMI	Body Mass Index
CSW	Community Social Workers
EDHS	Ethiopian Demographic and Health survey
GDP	Growth Domestic Product
HAZ	Height for Age z score
IDDS	Individual Dietary Diversity Score
IFIAS	Individual Food Insecurity Assessment Scale
PH	Public Health
RERB	Research Ethics Review Board
RH	Reproductive Health
SDG	Sustainable Development Goal
UN	United Nation
UNICEF	United Nation’s Children Fund
WAZ	Weight for Age Z score
WHO	World Health Organization

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1. Introduction

1.1 Background

The term street children have many definitions in different settings (1). According to United Nations Commission for Human Rights, Street children are defined as children under 18 years of age, male or female who spend all or parts of their time on the street, lacks supervision, protection or guidance which put them vulnerable to a range of health and psychological risks/problems (2). The United Nations Children's Fund (UNICEF) strengthens this definition as “any girl or boy who has not reached adulthood for whom the street (in the broadest sense of word including the unoccupied dwellings, wastelands) has become her/ his habitual source of livelihood and who is inadequately protected, supervised or directed by responsible person” (3).

Many scholars (researchers and organization) e.g. WHO, UNICEF classify these street children as; **Child of the streets**: those who have no family members left alive or the family may have abandoned him/her so that the child struggles to survive in the streets. The other one is: **A child on the street** –those who spend most of the day time on the street due to poverty, overcrowding, sexual or physical abuse at home. This group has chance to visit family members some days and even living under a good shelter (3–5). Most of the scholars agreed that these groups of children must have been observed to spend substantial part of time on the street unless otherwise a child whom found on the street once or twice shouldn't be considered as street child (1).

These children in many countries named after their daily activities like Juvenile prostitutes (Stuttgart), street gangs, vendors (Ghana). The other mutant names given like “street kids”, “parking body”, “teenage beggars”, “street bums”, “area boys and girls”; to express a complex phenomenon of street children (1,3,4). The modern, socially and politically used, equivalent to street children in Ethiopia especially in Addis Ababa is “Godana Tedadari” or “Berenda Adari”, which is translated to mean street dwellers or those who live off the street (6). The magnitude of street children may vary from countries to countries, level of urbanization, economic activities and so on (6–8). In 1989, UNICEF estimated that 100 million children were growing up on urban streets around the world (4). Even though the number of street children is impossible to quantify, the figure almost certainly runs into tens of millions across the world. It is likely that the numbers are increasing. In spite of this, Ministry of Labor and Social Affairs of Ethiopia in collaboration

with UNICEF, estimated that the number of “on or off” street children’s to be around 150,000 children live on the streets of which about 60,000 live in the capital, Addis Ababa (9). However, aid agencies estimate that the problem may be far more serious, with nearly 600,000 street children country-wide and over 100,000 in Addis Ababa (9).

Undernutrition is a pathological state resulting from the consumption of inadequate quality or quantity of daily food over an extended period of time and mostly related to poor diet or severe and repeated infections particularly in underprivileged populations like women, children and adolescents especially who are street dwellers and victims of overwhelmed economy, extremely poor, illiterate, sexually abused, addicted to substances and stigmatized, fails to attain their growth threshold (10,11). Adolescence is a concept encompassing physical, physiological and emotional stages of transition from childhood to adulthood and the age ranges ten through nineteen(12). This stage is characterized by rapid, intense linear growth and increased body demand for adequate diet. Adolescents who gain adequate dietary demand and emotional support at this stage gain 15-20% of adult height, up to 60% of skeletal mass, and 50% of adult body weight (13). On the contrary, Poor quality or quantity diet intake during adolescence may lead to undernutrition that could resonate throughout generations since adolescence is sensitive period for development of both future productive and reproductive capacities and the problem can be worst enough among adolescent street inhabitant (14). This adolescent’s nutritional status can be measured by their growth in height and weight or combination of the two (15). The percentage of children with a low height for age (stunting) reflects the cumulative effects of undernutrition and infections since or even before birth. This measure can therefore be interpreted as an indication of poor environmental conditions or long-term restriction of a child's growth potential. The percentage of children with a low BMI for age (thinness) indicates acute loss in weight as a reflection of recent deprivation of nutritional status (15,16).

1.2 statement of the problem

Undernutrition is the single threat to global public health and by far the greatest contributing factor for child morbidity and mortality (17). It is a significant Public Health problem described as silent killer /enemy affecting those who cannot express their voice (dependent to others like children and elderly) and any part of the population when environmental conditions disturbed (17,18). This public health problem can touch any segment of the population like under five children, youth and adolescents, women and pregnant mothers, elderly, children of the street, Orphan and vulnerable children in camps and so on (18,19).

Adolescents which comprises 20% of world's population and 80% of the developing countries, are the most affected group of population due undernutrition though over nutrition is an emerging problem (12). Even though prevalence of undernutrition among adolescents was not declared in the past three decades, it's estimated that the global burden of undernutrition especially thinness found to be 8.4% for girls and 12.4% for boys. The global estimate for stunting among adolescents' data is varied with high estimate 52% in Guatemala and 44% in Bangladesh to 8% in Kenya and 6% in Brazil (13). However, there is scarcity of data on the nutritional status of adolescents who are street dwellers in global and local context.

This undernutrition is the major health problem in developing countries and the whole world which affects one in three people which in turn leads to losses of 11% gross domestic product (GDP) every year in Africa and Asia (20). Ethiopia was losing an estimated 10 % of GDP from 2006 to 2015 (about US\$12 billion) because of iron and iodine deficiency disorders and stunting alone(21).

A summary report among Adolescents Age 15-19 from 2000-2017 in Sub- Saharan Africa, indicate that the prevalence of thinness (BMI for Age Z score<-2SD) among boys were found to be 9% where as in counterpart female were 3.8% and the prevalence of stunting or short stature (HA Z<-2SD score) among girls were found to be 13.7% (13).

In Ethiopia, though no data on nutritional status of children aged 6-14 in both male and female, the EDHS showed that 29% non-pregnant Adolescent girls age 15-19 are most likely to be thin (BMI

below 18.5) whereas 59% Adolescent boys (age 15-19) are most likely to be thin. On the contrary to these, the country has no strong recorded data that shows the nutritional status of street children.

In order to alleviate the destructive effect of undernutrition, the world's communities are engaged in planning and taking intervention activities to reduce then bring it to the end of the prevalence and effect of all forms of malnutrition. The UN, WHO and UNICEF combined report indicated that till 2016, a significant progress in reducing stunting, wasting and underweight has been achieved even though not satisfactory in African and Asian. In addition, the world community planned to end all form of malnutrition by 2030 (22). The 2012 world health assembly endorsed 6 global nutrition targets for 2025 among these: 40% reduction of stunting and <5% reducing and maintain wasting among under five children are some of the plans undertaken (22).

In Ethiopian, child malnutrition has become a concern since late 1950s when the first nutrition survey showed that protein and calorie malnutrition was rampant (23). But there were no supporting policies and strategies related to nutrition till the formation and launching of national nutrition strategy (NNS) on February 2008 (24). In addition, the country committed to improve food nutrition security and reduce then end undernutrition. Some of the commitments the country hold are: the GTPII (2015/16-2019/20), second national nutrition program NNP II(2016-2020), Seqota declaration (2015) can be mentioned (25).

In Ethiopia there is no clear information about the health status in general and nutritional status in specific; like the prevalence and forms of undernutrition, their associated factors among adolescents who are street dwellers or who engaged 'on' or 'off' street life. Academic understanding of street children is fragmented and research is not systematically conducted. As a result, the country lacks clear strategies or plans to solve the existing problem. This might be due the fact that little research based information is available which can show the gap and intervention areas for policy makers and aid organization. However, this research aimed at filling information gap related to prevalence and forms of undernutrition, factors that can contribute to undernutrition and possible suggestions to alleviate the problem so that policy makers, aid organizations and others in position will get information on existing problem and areas of intervention.

1.3 Significance of the study

Street children's health is an area that is not well researched, especially nutritional aspect lack attention, in which only few quantitative and qualitative studies done in different parts of the country in past remote years. This information is, however, outdated and the findings may not be relevant in other setting. Therefore, this study sets out to determine the magnitude of undernutrition and associated factors among street children and the generated information will serve as an update and base line data for researches, planners and aid organizations so that in a long run the issue of streetism and problems related to street adolescents will get resolved.

2. Literature Review

2.1 magnitude of undernutrition among street children

The magnitude of undernutrition among street children may vary from nation to nation and even the types of malnutrition they went through and the kind of food they might find and eat on the street is different. For instance, in USA 14% street children used to eat at fast food restaurant in which a diet containing excessive amount of cheaper carbohydrate rich foods (26). In spite of these, literatures in Asia and Africa indicate that children's consume a diet which is poor in micro and macro-nutrient which lead them to under nutrition (27,28).

According to a study in south India, it was observed that thinness was 26% and higher among 13-18 years of age as compared with 8-12 years of age. Overall prevalence of stunting was 48% which was higher among under 10 years old street children (8). In a study that was conducted in Bangladesh it was found that underweight was higher (66.67%) than normal weight (33.33%) among 6 to 15 years old street children (29). Similar cross sectional study in Shabang area of Dhaka city indicated that the prevalence of underweight was 61.7% (30).

A systematic review in Africa showed that most of the literatures indicated poor growth and nutritional status among street children. Among the studies, the one which was conducted in Alexandria, Egypt revealed that the prevalence of malnutrition to be high (83%). The study also revealed that street children who had strong family tie were more likely to have better growth than those with poor family tie (31).

A study conducted in Eldoret Kenya indicated that 65.5% of children were with normal height for age but 31.1% were stunted whereas 41% of the children had low Wight-for age (32). As per the knowledge of researcher, there is no findings specifically related to nutritional status of street children in Ethiopia.

2.2 Factors associated with undernutrition

2.2.1 Socio demographic characteristics of street children.

Most of the literatures showed that majority of the street children are boys than girls and in the range of age group 10-18 years on average (1,3,7,27,33). Similarly, systematic review done in low and middle income countries showed that boys were the most visible groups in the street (27). Some observations indicate that the reason for girls not to be found frequently in street are they are more liable to sleep in institutions, can live with relatives, be recruited in to sex work ,or be in “sugar daddy” relationships with older men, all of which may render them less visible (27). In spite of this, only a single research in Shabagh area in Dhaka city used purposively selected boys in the age range of 6 to 18 years old (30). Regarding the minimum age of street children, there is no specific cut point though some literatures indicate that the no of <5 children is rare (3). The least age observed during the review is 3 years and the maximum age is 18 years (7,33,34). Most literatures indicated that the majority of the street children are “on” the street who had a house to sleep in at night, the rest are “off” the street who had no home and family contact (1,35).

Based on the literature finding, the educational background of street children can fall in any range from being illiterate to attended formal education in junior/senior secondary schools (1,7) but most of them stopped schooling at primary level (27). The street children spent their time on street to earn money through informal economic activities including vendor, garbage collector, vehicle parking and washing and, gambling, shoe shiner, sex worker, robbing, begging (27), escorting blind parents (3), some may be hired by adults to beg and bring money. In some cases mothers sent out there under five children to beg on the street in turn the mother watch over them from the distance and collect the money when they got (3,34).

In the literatures it was indicated that most of the street children bought their own food by their income, some ate left over from hotels and restaurants, others ate from drop in centers and from their home (3). Regarding the mean age of streetism and mean duration of stay in the street, many literatures put different range of age and duration. According to a study conducted in south India, the mean age of children was 14.5years (± 2 years SD), other study in south Sudan indicated that the mean age of streetism was 13.4 years and the mean duration of stay in the street was 3.92 years (7,34,36). A systematic review that was conducted in low and middle income countries indicate

that children leave home within the age range of 6 to 16 years of age and having lived on the street for period of days to years (27).

2.2.2 Dietary Behavior

It is obvious that among the factors that affect nutritional status, dietary intake and the frequency in which diet practiced is the one. A research in the city of Bandung west java, Indonesia indicated that rice was the frequently consumed food type with a 69.2 times per month which means that the street children ate rice two times a day. On the other hand, consumption of carbohydrate rich foods was only about five times a month. This research also indicated that the consumption of Animal source foods was considered as a “luxury” supporting that lamb/ meat consumption was only 0.2 timers per month. The commonly consumed food types were processed legume foods like soy bean cake, green and red beans with frequency of 4 to 13 times as a month. This research revealed that the children’s more often consume vegetables and fruits that are locally available and cheap (28).

Another research in Lilongwe, Malawi, among the assessed children 75% of them indicated that they ate 3 main meals each day, others (19.4%) two main meals per day and the rest (5.6%) ate only one meal per day. These children consume animal source foods like fish and chicken 3 times a week and also they ate vegetables once a week but no report for consumption of legume (37).

Another issue that can affect nutritional status of street children and other home based adolescents is food security status. Food insecurity exists when people lack access to sufficient amounts of safe and nutritious food so that they are not consuming enough food for an active and healthy life. This may be due to the unavailability of food, inadequate purchasing power or inappropriate utilization at household level (38). As a result, insecure access to food may affect school attendance and achievement, reproductive decisions, migration strategies, employment options, runaway to cities and work areas and overall health and well-being and this food insecurity is common in places where cost of food inflated (39,40).

2.2.3 Infectious disease

Street children are often live in crowded and poor environmental conditions that increase the risk of acquiring infectious disease of childhood like upper and lower respiratory tract infection ,ear

infection, GIT infection and parasites, acute febrile illnesses especially typhoid and typhus, lice and flea born disease and so on are particularly high in these population (26).

According to a research that was conducted in Zahedan, Southeast of Iran among 216 street children, about 18% of the children had a history of at least one disease that would have referred to the doctor and 15.6% felt discomfort in different parts and organs of the body; however, due to lack of money they never referred to the doctor (41).

A systematic review conducted in African indicated that infectious disease is more prevalent among street children than children at home. The major infectious disease identified are, TB, Pneumonia and malaria which are the leading cause of morbidity and mortality among street children. Among these cases of morbidity, malaria was prevalent in West Africa where as TB and Pneumonia was highly prevalent in East and South Africa respectively (27,31).

Across-sectional research that was conducted in Adama (Nathere), Ethiopia among 600 street children showed that 61.6% of the street children reported health problems like Abdominal pain, cough and chest pain, eye and ear problems, headache, and leg ulcer(35).

2.2.3.1 Undernutrition and Intestinal Parasites

Cross sectional studies that were conducted at different part of Africa showed nearly similar scenario regarding the relationship between parasitic infection and nutritional status. The parasitic infections identified to mostly affect street children in Africa were caused by worms; like *A.lubricioids* and *Schistosomiasis*, Protozoa like *Giardia* *Lambia* and *blastocystishomins* (27). A study that was intended to assess the impact of intestinal parasite on nutritional status in Nigeria revealed that Hookworm and *Ascaris lumbricoides* were each significantly associated with stunting, wasting, and underweight (42). Four years later nearly a similar study in the same area showed *E. histolytica*, Hookworm and *G. Lambia* were significantly associated with stunting, wasting and underweight (43).

2.2.3.2 Undernutrition and HIV/AIDS

Regarding STI including HIV/AIDS, it was found that the prevalence of STI especially gonorrhoea and HIV/ AIDS were highly prevalent among street children than even female sex works, drivers

and prisoners (31). Even though no single studies that assess the HIV/ AIDS prevalence and its association with malnutrition among street children, a study that was conducted among HIV positive adolescents in public hospitals of Addis Ababa revealed that the prevalence of stunting was 37.4% of which 8.2% were severely stunted and the prevalence of thinness was 15.6% from which 2.9% severely thin. skipping of meal and availability of primary care were significantly associated with stunting whereas treatment interruption, nutrition counseling and moderately household food insecurity were significantly associated with under nutrition (44).

2.2.4 Physical Injuries and Harassment

A research that was conducted in four states of Latin American among 584 street children 5-17years of age showed that 36% of street children in those countries reported a range of significant injuries: scratches (19.5%), cut/laceration (16.4%), burns(8.6%), car accidents (8.9%), sprains (4.6%) and amputation (0.3%) (28,45). These children can also develop some constitutional sign and symptoms due to physical health hazards as counteracts of prolonged exposure to sunlight, noise and smoke. The sign and symptoms include headache, vertigo, hyperpyrexia, cough and difficulty in breathing (36). In addition to these, violence and sexual abuse are found in the world of street children. These children commonly reported experiencing of physical violence, verbal abuse and monetary extortion by peers and adults including parents and relatives, police and sex work clients. The prevalence of sexual abuse for girls may be particularly high; in one study 42% of street girls reported that their first sexual experience was forced. These and other physical and sexual violence would result in psychological distress which would again disturb the physiological and metabolic functions of the body then in turn lead to mal-absorption (27).

2.2.5 Substance Use

The nature of continuous exposure to the street and its associated life-styles make street children vulnerable to the use of psychoactive substances. A study that was conducted among 215 street children in Guwahati City, Assam showed that 80.9% use different psychoactive substances and it showed that risk of substance use increase as age, duration of street life increase in addition to being from orphaned families, substance use in the family. The most commonly used substances were snuffing glue (87.4%) followed by smoking cigarette (84.5%), Alcoholic (20.1%), Ganja (12.6%) and intravenous drug use (1.15%) (46). A cross sectional study that was conducted in

Kolkata, India among 540 street children indicated that there is an association between protein and calorie deficiencies and substance abuse (33). In addition, It was observed that smoking was significantly associated with age, place of stay, duration of stay and type of work in which street children are involved (8).

2.2.6 Duration of stay in the street

A cross sectional study that was conducted in Cameron to assess socio-demographic and behavioral characteristics' of 399 street children revealed that 44.9% of these children had been homeless for a period of 7–12 months, whereas 35.8% had been homeless for less than 6 months and 19.3% for more than 13 months (47). However, it was observed that duration of stay in the street whether “on” or “off” would be associated with risk of acquiring infection, substance abuse and alcoholism, physical and sexual abuse, risk of acquiring STI including HIV/ AIDS, intestinal parasitosis and so forth that would again results in malnutrition as a cumulative effect (7,31).

2.2.7 Personal hygiene and Environmental Sanitation

Because of their relatively high exposure to the street, it is very important for street children to maintain their personal hygiene and good immunity status. In addition to the invasion of bacteria, child respiratory infection of the street children can also be exacerbated by the presence of metal contamination from toxic motor vehicle fumes. Skin infections often occur due to lack of personal hygiene habits such as bathing, changing clothes and wearing their own towels (28). Most (86.7%) of the respondents washed their hands before eating and only 13.3% respondent did not. A little more than half (52.5%) of them took a bath everyday while 47.5% did not. In addition, 60.8% of the respondents suffered from a disease in the last 3 months, while 39.2% of the respondents did not (30).

In one of the study in Ethiopia, Personal hygiene was observed to be very poor which could be mainly due to the unavailability or the less access to the facilities for washing, which is yet another reflection of their standard of living (35).

2.2.8 Accesses to Health care services

Literatures reported that little or no access to health care due to high hospitalization and consultation cost in health care facilities, stigmatization (neglect) by health workers/ care providers and little time to visit health facilities as they struggle during the day time to raise money for food and other basic needs are some of the factors that denied the street children from using services delivered from health institutions (31).

According to a research conducted in urban area of Nairobi, Kenya over half of the participants (53.9%) received medical assistance whenever they fell sick and 46.1% did not. The most common reason for not seeking medical assistance was not being able to afford the cost (33.9%). A government health facility was the preferred health service provider with 83.5% using them (48).

2.2.9. Physical and sexual violence

Street children are the one who encounter an enormous form of violence from their nearby environment with a complex nature (49). The commonest form of violence that street dwellers encounter includes physical, sexual, emotional and psychological (23,49). These forms of violence are supposed to have an impact on the nutritional status of street inhabitants especially adolescents and children. Even though limited literatures exist that show direct relationship of violence and undernutrition among street adolescents, a cross sectional study that was conducted among female in an age range of 15 to 24 showed that Underweight women were 1.39 times, 1.48 times, 1.31 times, and 2.11 times more likely to report the experience of physical intimate partner violence (IPV), physical and/or sexual IPV, minor physical IPV, and severe physical IPV, respectively than normal weight women (50). A cross sectional research that was conducted among juvenile female street hawkers in Anambra State, Nigeria indicate that out of 186 study participants, 130(69.89%)experienced different form of sexual violence including inappropriate touches (81.5%), verbal abuses (93.1%) and sexual intercourse (24.6%). The highest incidence of sexual abuse occurred in the 13 to 14 years' age group followed by 15 to 16 years' age group and 10 to 12 years' age group with 83.3%, 79.5% and 57.1% respectively(51).

Conceptual frame work

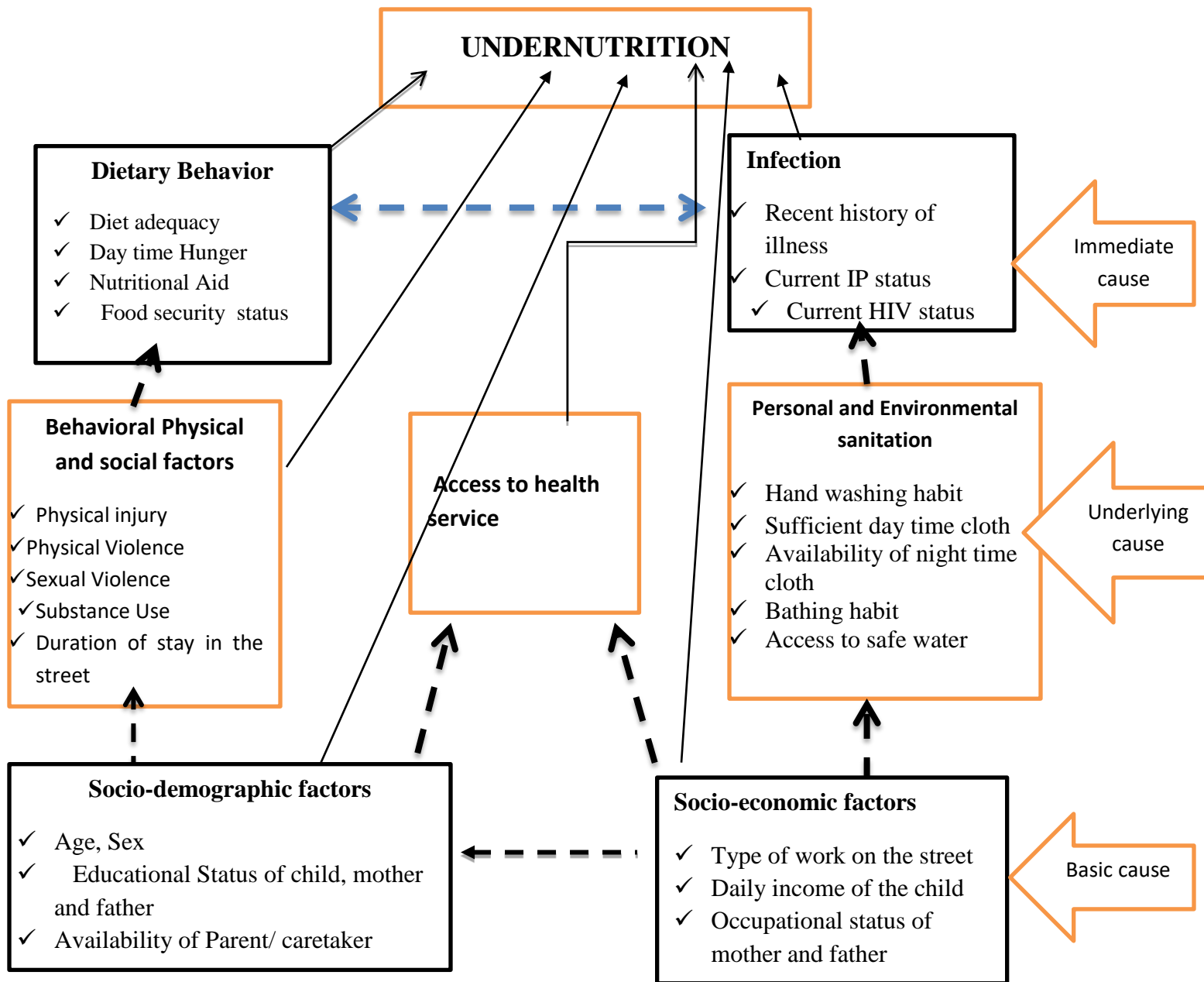


Fig. 1 Diagrammatic illustration of factors that are associated with under nutrition among street children, Jimma, 2019 (Adapted from UNICEF malnutrition conceptual frame work)

3. Objective of the study

3.1 General Objective:

To determine prevalence of undernutrition and associated factors among Adolescent street children in Jimma town, South West Ethiopia 2019

3.2 Specific Objective:

- ❖ To assess the prevalence of thinness among Adolescent street children in Jimma town, South West Ethiopia 2019.
- ❖ To assess the prevalence of stunting among Adolescent street children in Jimma town, South West Ethiopia 2019
- ❖ To identify associated factors for thinness among Adolescent street children in Jimma town, South West Ethiopia 2019.
- ❖ To identify associated factors for stunting among Adolescent street children in Jimma town, South West Ethiopia 2019.

4. Methods

4.1. Study area and period

The study was conducted in Jimma town, Oromia regional state, South West of Ethiopia from March 1-31, 2019. The town is found at a distance of 345 km from Addis Ababa, the capital city of Ethiopia. According to the 2015 National Urban System Study, the population of the city was 199,575 while the city administration claims over 200,000 of which 100,347 are male and 99,229 females. This makes the city among the top 10 most populous cities in Ethiopia. There are ten public health institutions (2 hospitals, 4 health centers and 4 health posts) and 24 private clinics in the town. There are some non-governmental organizations that specifically targeted to serve orphan and vulnerable children. These are FAYA integrated development organization, OSSA and RAHAB can be mentioned. FAYA Integrated Development Organization provides comprehensive services ranging from legal aid to medical treatment for these street children in the town. The organization has central office at Jimma town and decentralized offices at each thirteen urban Kebeles of Jimma town. Each office of respective kebele runs by community social workers and registered community volunteers ranging 20-30 on each Kebeles. These community volunteers work under close supervision from community social workers and have direct contact with the street children. The organization updates the number and list of street children regardless of age and sex.



Figure 4: Map of Jimma town showing available Kebeles and neighbor woreda surrounding Jimma town (Source: Jimma town Health office. Accessed date: January 2018)

After a preliminary survey was conducted the numbers of adolescent off the street children were found to be 365, which were considered as a source population.

4.2. Study design

Community based cross sectional study design was employed from March 1-31/2019.

4.3. Population

4.3.1 Source Population: All adolescent off street children having age 12-18 in the thirteen urban Kebeles of Jimma town

4.3.2 Study Population: All available adolescent off street children who were included in the study through fulfilling inclusion criteria and having age ranges from 12-18 years old during the study period.

4.3.4 Study Unit: An individual street child who was directly involved in the study.

4.4 Eligibility Criteria

4.4.1 Inclusion Criteria

✓ All adolescent street Children who live only on the street and have no family contact or do not go back to their families at night time, residing on the street at least one month prior to the study and aged 12-18 years of age.

4.4.2 Exclusion criteria

✓ Adolescent Off the street children who have difficulties in communication (difficulty in auditory or verbal integrity).

❖ Those children who are under 12 years of age were not candidate of the study due to ethical issues. The national ethics review guideline which was written by ministry of science and technology of Ethiopia recommended that children ≥ 12 years of age and emancipated minors can participate in a research with proper assent (52).

4.5. Sample size determination and Sampling technique /Sampling procedures

4.5.1 Sample size determination

By considering the two forms of undernutrition among adolescents (stunting, and Thinness) that can happen among street children and using assumptions of critical value (α) 5%, 5% margin of errors, 26% prevalence of thinness and 48% prevalence of stunting, sample size for the study was calculated as follow using single population proportion formula (**Table 1**).

Table 1 Indicates the procedures used to calculate sample size for first objective

Parameter	Prevalence	S.S without correction for finite population proportion and non-response rate	Applying 10% non-response rate and finite popln. Correction formula	References
Thinness	26%	295.65 \approx 296	180	Mesheram I et al, 2015
Stunting	48%	383.55 \approx 384	206	

For the second objectives of the study; to determine the associated factors of undernutrition among the street children by considering age, substance use, nutritional aid and intestinal parasitic infection the sample size was calculated as follow (**Table 2**) by using STATCALC of Epi info 7.

Table 2: Shows sample size calculation for second objective with respective parameters.

S.No	Associated factor (variable)	% of outcome among unexposed	AOR	Power (%)	Margin of error (%)	Calculated sample size (n)	Reference
1	Age: 13-18 years old	28.2	2.69	80	5	156	Patricia K. et al, 2016
2	Substance use smoking	32.1	3.45	80	5	100	Meshram II, et.al, 2015
3	Nutritional aid	31.8	2.05	80	5	280	Birra A. 2016
4	Intestinal parasitic infection	47.6	1.92	80	5	328	Tamirat H. 2018

From the above tables, the maximum sample size was 328

From both objectives, the largest sample size was 384 and after applying finite population correction formula and 10% non- response rate, the maximum sample size would be 206.

It was planned to have a minimum sample size of 206 by considering a prevalence of stunting would be 48% and thinness was 26% and other factors which was taken from abroad since no formally recorded data regarding number of street children or nutritional problems they had. As a result, a preliminary assessment was made to quantify the number of street children who were residing in the study area and a total of 312 participants recruited after intensive searching in all over the thirteen Kebeles in Jimma town.

4.5.2 Sampling Technique

Total enumeration of 312 permanently residing adolescent off street children in Jimma town were included

4.5.3 Sampling Procedure

A preliminary survey was conducted all over the urban Kebeles of Jimma town with the help of community social workers and volunteers who were employees of Feya integrated development organization. Registration of all available street children in all corners of the town was made with

similar assessment format which contains information to be filled like Name, Nick name, age, sex, friends' name, usual area of residence, duration in the street, any anatomical deformity and any communication difficulties with intention that these information would be important during actual data collection time (See Annex). The surveyors made to have special focus to look for areas where these children can live like church and mosque areas, getaways of campuses, market places, bus stations, around stadium and under bridges and so on in addition to surveying kebele by Kebeles.

Diagrammatic illustration of sampling procedures

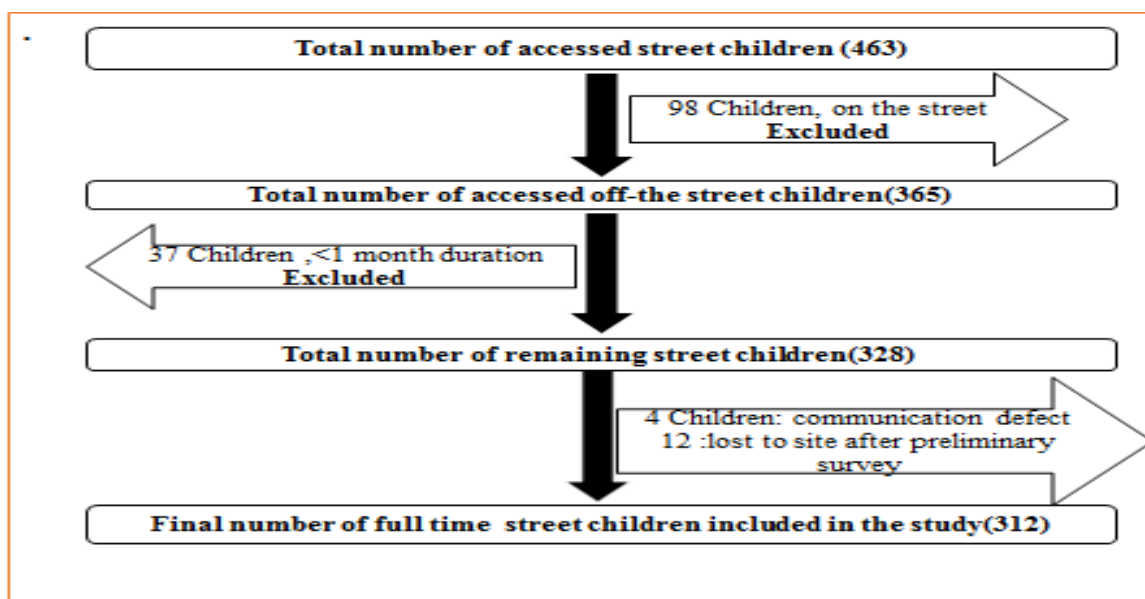


Figure 5: Schematic representation of sampling procedures for adolescent street children in Jimma town, south west Ethiopia, 2019

4.6. Data collection procedures (Instrument, personnel, data collection technique)

Data collection instruments- Data were collected using Interviewer administered structured questionnaire and anthropometric measurements. Structured questionnaire was prepared after reviewing different published literatures and related studies. Questions related to socio-demographic, socioeconomic, sanitation, behavior, infection, physical and sexual violence and health care access were prepared originally in English language and then translated to Amharic language for easy management, then translated back to English to maintain the quality of data and

consistent information. In meantime also standard Anthropometric measurement capturing instruments were used. For stool examinations, specimens were collected from each participant using a clean and labeled plastic vial with an applicator stick. The collected stool samples were properly mixed with 10 mL of 10% formalin for preservation. The preserved stool samples were processed using formalin-ether concentration techniques. All the different developmental stages (eggs, cyst, oocyst, larvae, adult and segments of adult worm) of the parasitic organism were recorded by senior laboratory technician. Dietary behavior was assessed using a qualitative food frequency questionnaire per 7 days recall after intensively searching and preparing locally available food items. The food frequency questionnaire was made with a 29 food items that could find out the usual foods eaten by the children and frequency of consumption within a seven-days prior to the study, for this tool internal consistency was checked with a **cronbach's Alpha 0.829**. Individual Dietary diversity score (IDDS) within the past seven days recall method, frequency of meal and other related characteristics of an individual were measured by using standard tool which was adapted with slight modification from FAO Guideline(53). Frequency of food consumption were assessed using a food frequency questionnaire containing food items that are commonly consumed in the study area (Jimma town) (40). Food items were categorized into 9 groups based on FAO recommendations in order to assess individual dietary adequacy. The response categories were "Yes" if at least one food items in a group was consumed and this would score one point. In case where a food item was not consumed in a group, zero (0) point was given representing "No". Dietary diversity was obtained by summing the number of food and food items consumed in each group separately. The total score were calculated and those with DDS score < 5 were categorized as inadequate dietary and those with ≥ 5 adequate (54). Individual level food insecurity was assessed using IFIAS that was previously validated in the study area (39) and internal consistency checked with **cronbac's Alpha 0.873** .

Weight was measured to the nearest **0.1 kg** using digital scales (SECA) with the subjects shoeless and in light cloths. **Height** was measured in a standing position using a height meters mounted against a wooden board wall to the nearest of 0.1 cm with detachable sliding head piece. Measurements was taken with the children standing barefooted and shoulders erect with their back of heels, buttocks and head touching the wall (55). Each study participant was measured twice and the average of the two measurements was recorded. In case if difference in the two measurements observed, then the participant was put in re-measurement for the third time.

Physical violence was assessed with a 15 item questions having **0.805 cronbac's Alpha**

In order to measure physical violence a two component naming **low** and **high** physical violence created after intensive searching and adopting from ICSTA. The candidate items for low physical violence were

- ✓ Push, shake or throw something at you
- ✓ Hit, beat, spanked with a hand
- ✓ Twist your arm, ear or pull your hair
- ✓ Hit with a closed fist

Candidate items for high physical violence were

- ✓ Choked or tried to drown you
- ✓ Locked, tied or chained you up
- ✓ Burned, scalded, crushed fingers or hands with intension to harm
- ✓ Washed mouth with soap or pepper
- ✓ Made to stay outside in the cold or heat
- ✓ Put in hot or cold water

4.7. Study variables

Dependent Variable was undernutrition; **stunting** (HAZ < -2SD z score) and **Thinness** (BMI for Age < -2SD z score) (15).

Independent variables

- ❖ **Socio-demographic factors:** Age, Sex, educational Status of the Child, availability of Parent/ caretaker, Contact with Parents
- ❖ **Socio-economic factors:** Daily income of the child, Occupational status of mother, Father
- ❖ **Behavioral, physical and social factors:** Physical injury, Sexual violence, Physical violence, Substance use, Duration of stay in the street
- ❖ **Personal and environmental sanitation:** Hand washing habit, sufficient day time cloth, Availability of night cloth, bathing habit, Access to safe water
- ❖ **Infection:** Recent history of illness, Current intestinal parasite infection status, Current HIV status

❖ **Dietary Behavior:** Food Consumption Frequency, dietary adequacy, Day time Hunger, Food security status, Nutritional Aid and Meal Frequency

❖ **Access to Health Care**

4.8. Operational definitions (if any)

Children of the Street: Children of either sex who are within the age group of 12-18 years and who are both economically and socially engaged in street life. These children live and work on street without any kind of control or assistance from parents or relatives. This category includes orphans, runaways, refugees, and others who have no contact with significant caregivers or have occasional or rare contacts with their families(56).

Undernutrition: A child was considered as having undernutrition if he or she has stunting and/ or thinness.

Stunting: height-for-age below < -2 SD Z-score of the 2007 WHO standard reference values

Thinness - BMI- for- age below < -2 Z-score of the 2007 WHO standard reference values(15)

Adequate meal Frequency: A child was categorized as having adequate meal frequency if s/he eats ≥ 3 standard meal otherwise inadequate.

Adequate individual dietary diversity: if an individual's DDS ≥ 5 for a group of foods over a one-week reference period where as inadequate or low if DDS < 5 (54).

Food insecure: Adolescent food insecurity was measured with a four item index. an individual was considered as food insecure if s/he respond "yes" to at least one questions that assesses IFIAS (39).

Ever Substance use: Referred to as the use of at least one of the substances (alcohol, khat, cigarettes, and illicit drugs) to alter mood or behavior at any time in life (57).

Current substance user: Use of substance at least once in the past one month.

Sexual Violence: A child considered as sexually violated if at least s/he attempted for or committed sexual intercourse unwillingly, raped, unwelcome touch to sexual organ by any person regardless of their relationship to the victim, in any setting, including but not limited to home and work'(58).

Physical violence: intentional use of physical force or power, threatened or actual, against another person, that either results in or has a high likelihood of resulting in injury, death, psychological

harm, mal-development or deprivation. Its measured by Child Abuse Screening Tools (ICAST) children's version for those age 12 and older (ICAST-C)(59).

4.9. Data analysis procedures

The data were entered using Epi-Data Version 3.1, checked for completeness and error then exported to SPSS version 20 (SPSS Inc. versions 20, Chicago, Illinois). The data were explored, described and checked for outliers, X^2 assumptions checked for categorical variables. For anthropometric data analysis, standard deviation (Z scores) were obtained by WHO Anthro Plus software to determine the nutritional status of children. Children who's Height for Age z-score (HAZ) and BMI for Age z-score (BAZ) above-2SD scores was considered as not undernourished and those below -2SD scores as being undernourished (stunted and thin respectively). The collinearity effect was checked using variance inflation factor (VIF) and standard error and non-collinear covariates included in the independent binary logistic regression model to assess the possible association of independent and outcome variables. Independent variables with p-value <0.25 in bivariate logistic regression were included for multivariable logistic regression. Variables were considered as statistically significant if p-value < 0.05 in multivariable regression with a 95% C.I of AOR. The fitness of the model was tested by Hosmer- Lemeshow goodness of fit test.

4.10. Data quality management

Data were collected by five trained clinical nurses and supervised by two BSc holders in the field of Public Health Professional. The data collectors and supervisor were having two days of data collection training on how to conduct interview and anthropometric measurements. The digital weight scale was validated by using standardized weight before actual weighing of the study participant. The quality of data was assured through careful design, translation and pretesting of questionnaire, and proper handling of data. The data was monitored frequently during data collection and collected questionnaires were examined for completeness and consistency during interview and at the end of each day.

4.11. Ethical consideration

All necessary ethical clearance was obtained from the Jimma University Institute of Health science, Faculty of public health RERB. Official letters was submitted to Jimma town

Administrates, Jimma town health Office and respective thirteen kebele administrations, child and women affairs bureau and Jimma town police department to get permission for the study.

Permission to undertake the study was obtained from every relevant authority in the Town. The nature of the study was fully explained to the study participants to obtain their oral Assent prior to participation in the study. Privacy and confidentiality of collected information was ensured at all level. All children who were complaining of medical illness like itchy skin, acute febrile illness, musculoskeletal contusion, laceration or any loss of integrity and positive for intestinal parasites had taken appropriate treatment and dewormed after consulting senior physician working at OPD level.

4.12. Dissemination plan

The finding of this research will be disseminated in hard copy form and submitted to Jima University, Institute of Health, Faculty of Public Health Epidemiology department, Research and publication office, Library catalog and efforts will be made to publish the results in relevant peer reviewed journal.

5. Results

5.1 Socio-demographic characteristics of the respondents

The study was conducted among a total of 312 (100%) street children who were residing in Jimma town, SW Ethiopia, from March 1st through 31, 2019.

The median age of study participant was 14 (IQR=2) years and majority of them 191(61.2%) were found in the age group of 12-14 years and significant proportion of them 281(90.1%) were male. Majority of these children were born in rural areas 229(73.4%) and came to Jimma for different reasons whereas 81(26.0%) in urban areas but 2(0.6%) do not know their place of birth. The median duration of being street inhabitant was found to be 12 (IQR= 17) months. The details of selected socio-demographic characteristics are described below (**Table 3**).

Table 3: Explains selected socio-demographic characteristics of street children and their parents in Jimma town, SW Ethiopia, 2019.

Characteristics	Category	Frequency	(%)
Sex N=312	Male	281	90.1
	Female	31	9.9
Age N= 312	12-14	191	61.2
	15-18	121	38.8
Highest Education attained	Didn't attend school	78	25.0
	only read and write	23	7.4
	1-4	155	49.7
	5-8	56	17.9
Current Educational status N=312	Attending	22	7.1
	Not attending	290	92.9
Duration of streetism in months N=312	Less than 12 months	119	38.1
	More than 12 months	166	53.2
Educational status of Mother	Attended school	193	61.9
	Didn't attended school	119	38.1
Educational status of Father	Didn't attended school	214	68.9
	Attended school	98	31.4

Alive natural parents	Yes	156	50.0
	No	130	41.7
	I don't know	26	8.3

Almost half of the respondents used to spend the night(sleep) under hotel verandas, a significant proportion used small rented house ‘selen bet’ (local term) at daily basis and others used old and abandoned buildings for sleeping purpose.

Regarding family history, half of them mentioned that their biological parents (both father and mother) were alive whereas 130(41.7%) mentioned one or both of their parents were not alive but 26(8.3%) did not know about current family existence (**Figure 3 and 4**).

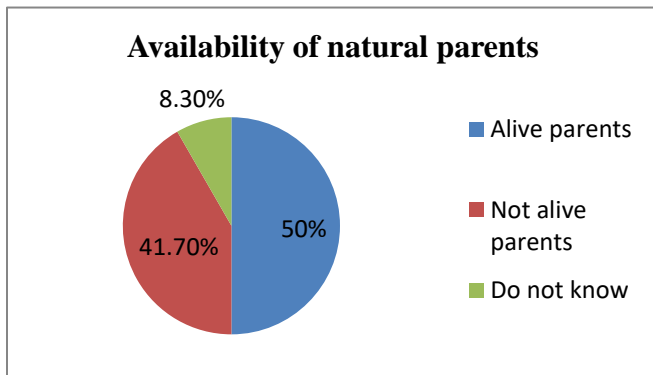


Figure 3: Shows percentage of natural parents who are alive or not for the street children who reside in Jimma town, south west Ethiopia, 2019

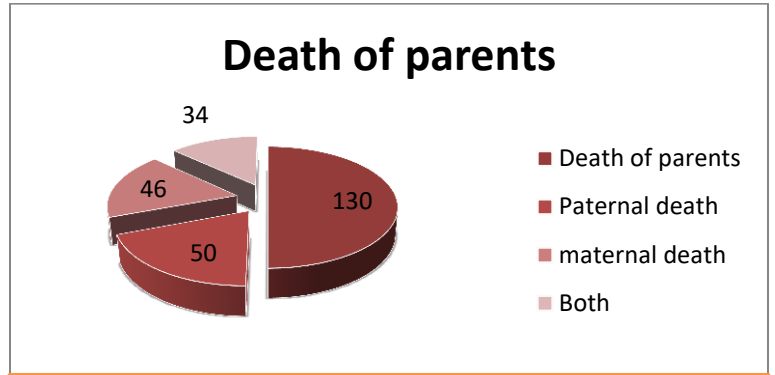


Figure 4: Shows number of natural parents who are not alive for the street children who reside in Jimma town, SW Ethiopia, 2019

Among those who have alive parents, 87(55.8%) claimed that they have recent contact with their families but the rest never met after leaving home.

5.2 Socio-economic characteristics

These street children were involved in different income generating activities in order to cover their daily needs. As a result, majority of them, 225(72.8%) were used to carry small items (“*serto-bella*”- local term) followed by attending and washing cars 84(27.2%), street vending or trading 76(24.6%) and delivering messages 57(18.4%) respectively (**Table 4**). The daily income of these

children ranges from 15 to 100 birr per day in which the Median income of the respondents was 35 (\pm 20 IQR) birr per day. Additionally, 128(60.1%) and 102(49.5%) of children were from house wife mothers and farmer fathers respectively.

Table 4: Shows socio-economic characteristics of the respondent and their families among street children in Jimma town, SW Ethiopia, 2019

Characteristics	Categories	Frequency	%
Work to earn money	Yes	309	99
	No	3	1
Type of work (n=309)	Shoe shining	19	6.2
	Carrying small items	225	72.8
	Delivering messages	57	18.4
	Attending and washing cars	84	27.2
	Begging	35	11.3
	Street vendor or trading	76	24.6
	Others	38	12.3
Maternal means of livelihood	House made	128	60.1
	Merchant	41	19.2
	Private employee	18	8.5
	Street begging	4	1.9
	i don't know	14	6.6
	Others	8	3.8
Paternal means of livelihood	Daily laborer	29	14.1
	Employed	30	14.6
	Farmer	102	49.5
	Others	39	14.4

5.3 Dietary behavior

In relation to daily dietary practices, 43(13.8%) were eating only once per day whereas 181(58.0%) and 88(28.2%) ate twice or three times per day respectively. Moreover, more than 3/4th of the respondents were skipping one or more standard daily meal and most frequently missed meal was breakfast 126(50.6%) followed by lunch 63(25.3%) (Figure 5).

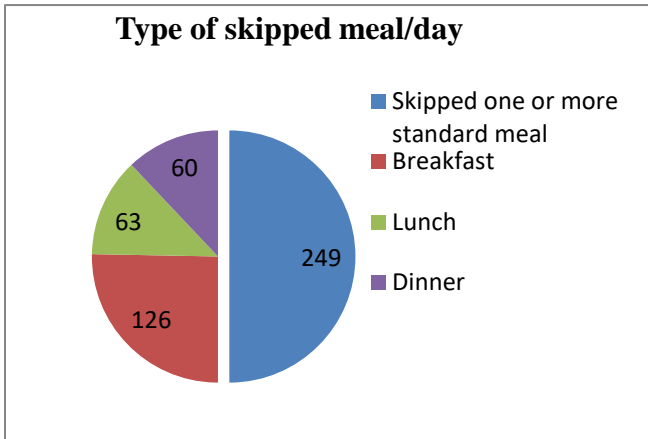


Figure 5: Shows types of skipped meal per day for street children residing in Jimma town, SW Ethiopia, 2019

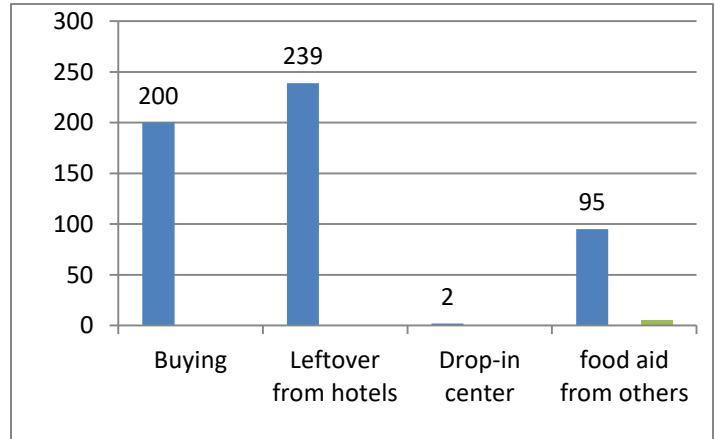


Figure 6: Shows source of daily meal among street children residing in Jimma town, SW Ethiopia.

Regarding to the source of daily meal, most of them search and gather their meal from hotels as leftovers or bought from local market and others asked food aid from other individuals (Figure 6). Additionally, among those who skipped daily meal, 198(79.5%) mentioned that they felt hungry because of skipping one or more daily meal and also 234(75%) from the total participants mentioned that they were not satisfactory with daily meal they ate and 274(87.8%) never got support from aid organizations.

The assessment of food groups eaten by the respondents after assessing individual food items in seven days before data collection (See Annex) and categorizing them to their respective food group revealed that almost all of the respondents were able to eat starchy staples one or more times whereas 307(98.4%), 279(89.4%) and 258(82.7%), ate/drink Other Vit-A rich fruits and vegetables, legumes, nuts and seeds and dark green vegetables, but none of them were able to eat or may be unable to classified eaten meat as organ meat or not. These findings showed that

consumption of animal source foods like meat and fish, eggs, milk and milk product were relatively low (**Table 5**).

Table 5: shows proportion of frequently eaten food groups per 7days prior to the study by street children residing in Jimma town, SW Ethiopia, 2019

Food Groups	Categories	Frequencies	(%)
Starchy staples	Yes	312	100
	No	-	
Dark green leafy vegetables	Yes	258	82.7
	No	54	17.3
Other vitamin A rich fruits and vegetables	Yes	307	98.4
	No	5	1.6
Other fruits and vegetables	Yes	218	69.9
	No	94	30.1
Organ meat	Yes	-	
	No	312	100
Meat and fish	Yes	158	50.6
	No	154	49.4
Eggs	Yes	197	63.1
	No	115	36.9
Legumes, nuts and seeds	Yes	279	89.4
	No	33	10.6
Milk and milk products	Yes	65	20.8
	No	247	79.2

Based on the 7 days dietary recall, mean dietary diversity score was found to be 5.35(\pm 1.33) based on this cut point 230(73.7%) children had adequate (one score for at least five food groups out of nine) daily diet consumption but 82(26.3%) had inadequate (scored less or equals to four food

groups) dietary diversity. In addition to this, based on a four item scale to assess individual food insecurity, 248(79.5%) were food insecure (**Figure 7and 8**).

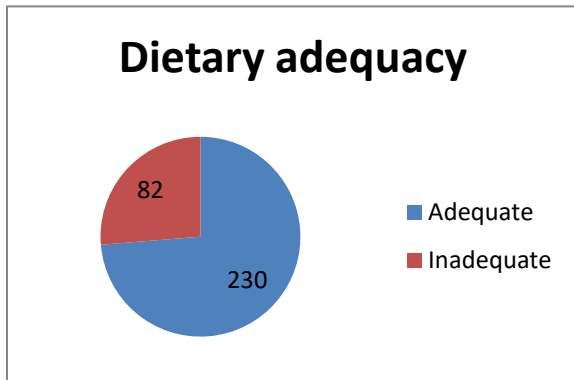


Figure 7: shows number of individuals with adequate and inadequate dietary habit based on Mean DDS

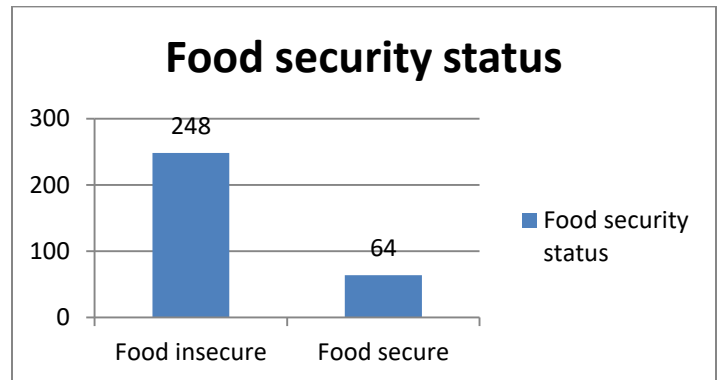


Figure 8: Shows food security status of street children in Jimma town, SW Ethiopia, 2019

5.4 Recent history of illness

In relation to recent history of illness, 112(35.9%) of the respondents revealed that they never had an illness but 29(9.3%) were ill at the time of the study and 96(30.8%) were ill within two weeks before the study with a total proportion of 64.1% history of illness (**Figure 9**).

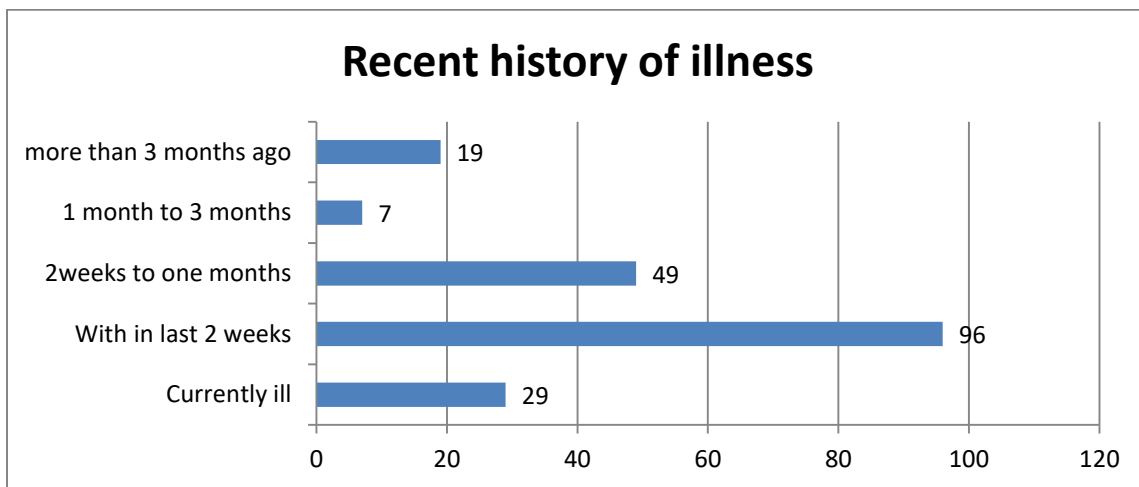


Figure 9: Shows number of individuals with respective duration of illness prior to the study among street children residing Jimma town, SW Ethiopia, 2019

This study showed that among those who were having recent history of illness 200(64.1%) before the study, 51.0%, 69.0%, 46.0%, 43.5%, 26.0% and 77.5% were complaining about fever, cough, diarrhea, vomiting, unable to eat and drink and abdominal pain respectively. In addition to this, out of total respondents 149(47.7%) were injured on different body parts for different reasons (**Figure 10 and 11**).

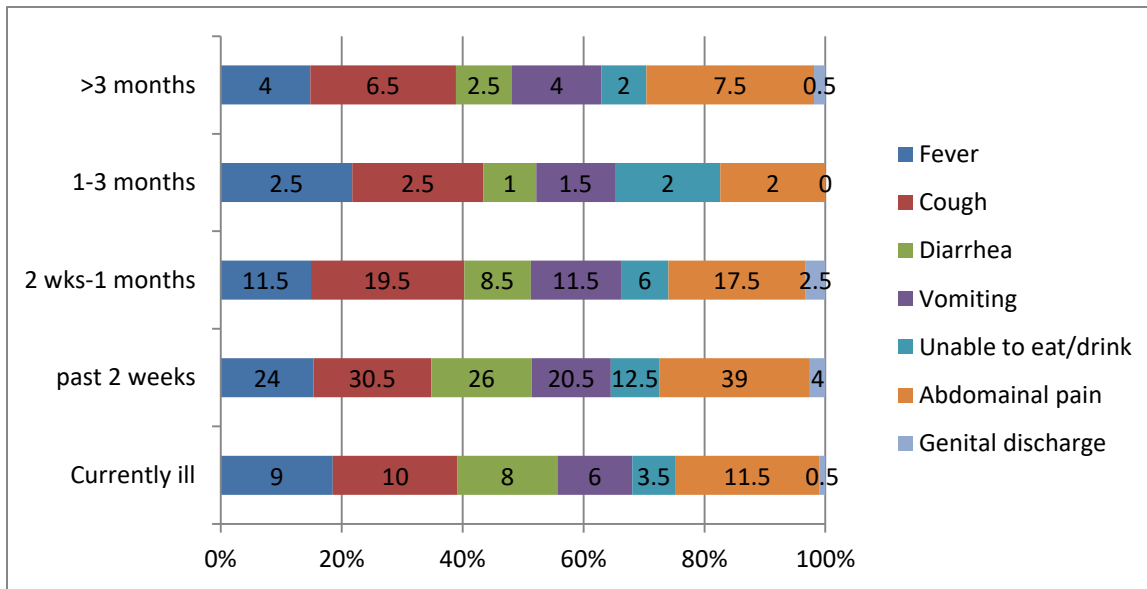


Figure 10: Shows proportion of symptoms for each mentioned duration of illnesses that street children encountered during their street life at Jimma town, SW Ethiopia, 2019

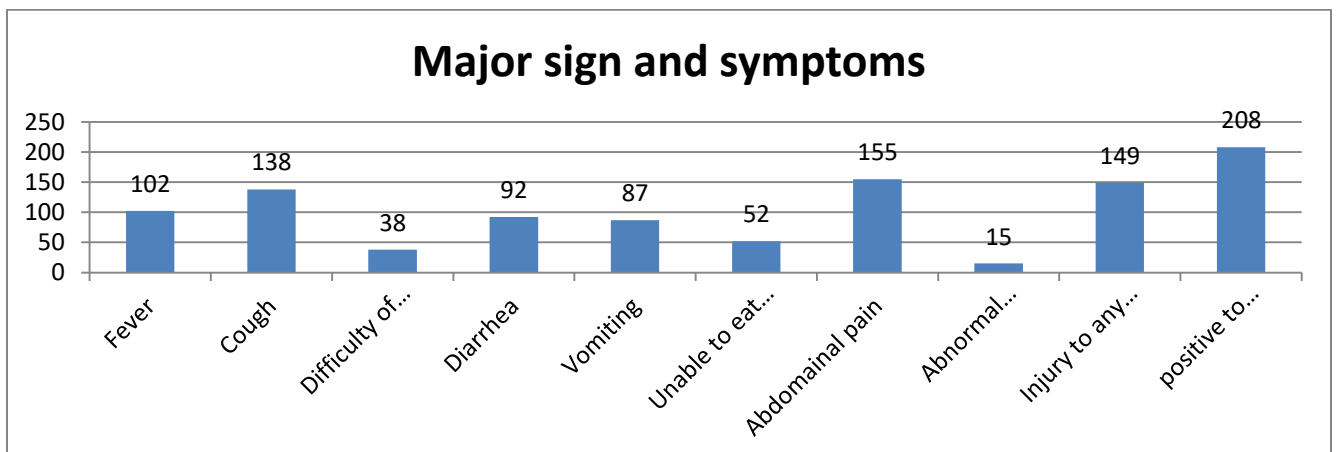


Figure 11: Shows total number of individuals who encountered an illness during or prior to the study

Furthermore, 208(66.7%) of the participants were infected with different intestinal parasites and 33(15.9%) had poly parasite and also 9(2.7%) were positive for HIV sero status examination.

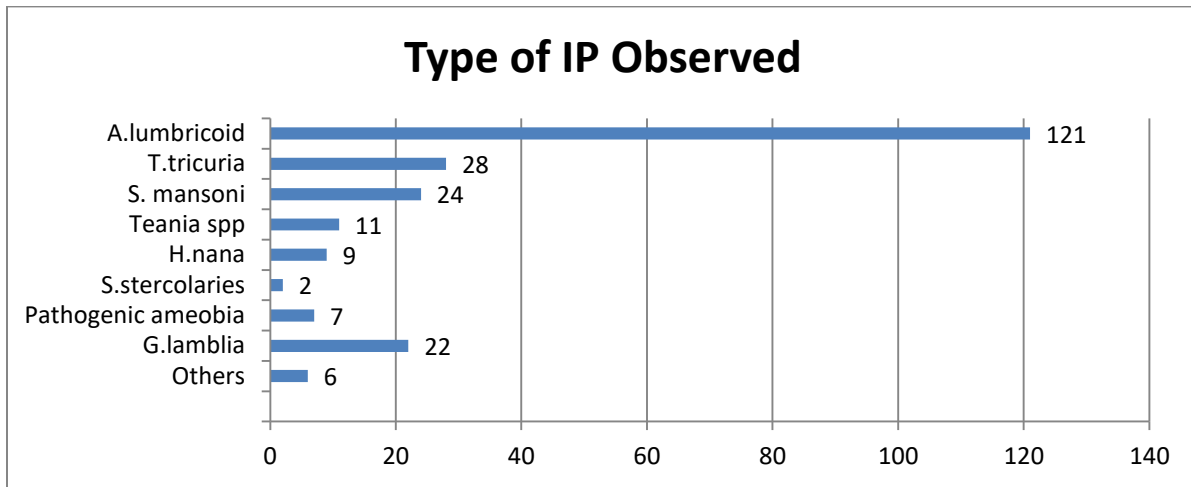


Figure 12: Type of intestinal parasites (IP) observed during the study among street children in Jimma town, SW Ethiopia, 2019.

5.5 Behavioral and physical factors

5.5.1 Physical injury

The study participants revealed that they were injured at different body parts due to different reasons at different occasions in the past three months before the study. As a result, 149(47.8%) were injured and 42.9%, 33.6%, 12.0%, 20.8% and 17.4% mentioned fought with friends, felling accident, vehicle accident work time accident and attacked by police officer as a reason for the injury.

These study participants also revealed that 218(69.9%) felt sense of anger, sadness and hopeless due to different challenges that they faced while living and working on the street. As a result, 77(35.3%), 157(72%) and 93(42.7%) of them mentioned being street inhabitant, lack of support and care from family and hunger, sickness and challenges on the street as a major reason to feel anger and sadness. Additionally, 211(67.6%) of these street children were felling fear, insecure and tensioned while living and working on the street because of 175(82.9%) attack from older gangs, 120(56.9%) daily robbery by others, 100(47.4%) arrest and attack by police officers and other.

5.5.2. Physical violence

This study also revealed that 135(43.3%) of the respondents experienced high physical violence whereas 253(81.1%) experienced low physical violence.

Table 6: shows the frequency of low and high physical violence with respect to each item for street children residing in Jimma town, SW Ethiopia, 2019.

Characteristics	Categories	Frequencies	(%)
Low physical violence	Push you, shake you or throw something at you?	210	67.3
	Hit, beat, spanked with a hand?	218	69.9
	Twist your arm, ear or pull your hair?	196	62.8
	Hit with a closed fist?	174	55.8
High physical violence	Locked, tied or chained you up	74	23.7
	Choked or tried to drown you	59	18.9
	Burned, scalded, crushed fingers or hands with intension to harm	41	3.1
	Washed mouth with soap or pepper	64	20.5
	Made to stay outside in the cold or heat?	31	9.9
	Put in hot or cold water?	22	7.1

5.5.3. Substance use

The street children are more prone to use locally available substances for different purposes. This study found that 124(39.9%) of them ever used substances whereas 96(30.8%) were currently using substances at the time of study. khat, cigarette and Mastish (glue) were the most commonly used substances (**Figure 13**).

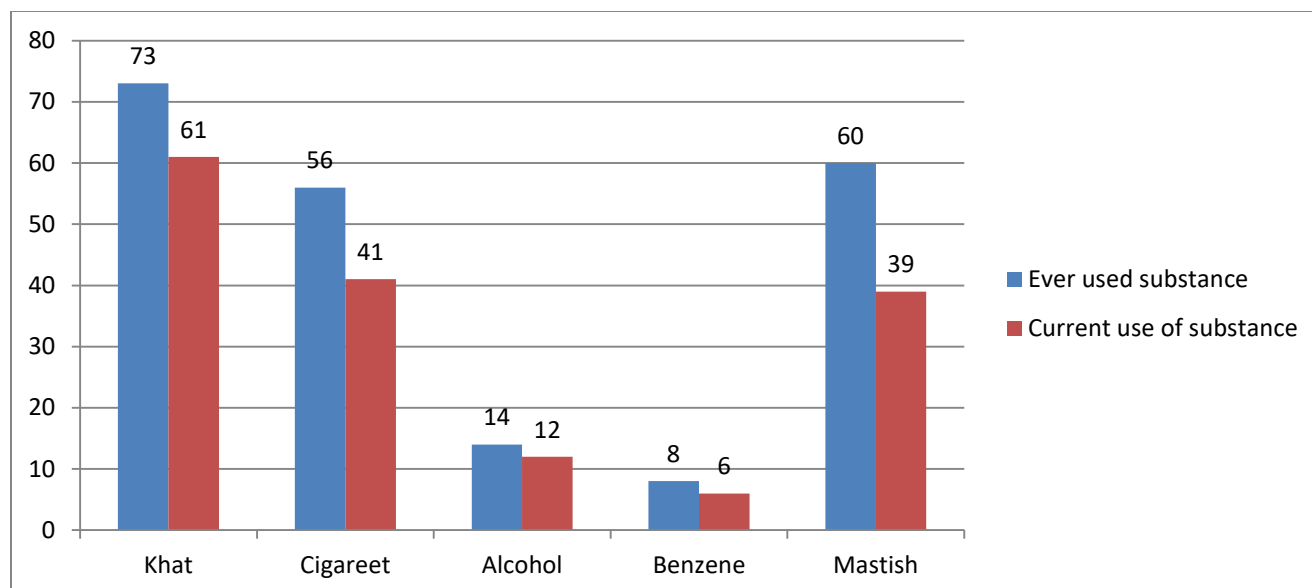


Figure 13: Shows number of individuals and commonly used substances by street children in Jimma town, SW Ethiopia, 2019

The duration at which these children used substance varies from less than a month to a year or more and some may use it daily; others sometimes and the rest used it in a weekly basis. Additionally nearly half of them revealed concurrent use of substances at a time.

5.6 Personal and environmental sanitation

In relation to hand washing habit before and after a meal 121(38.8%) revealed that they didn't wash their hands while sitting for meal and 282(90.4%) had taken bath regularly, 278(89.1%) washed their cloths regularly and the major source of water for bathing and washing clothes were 173(55.4%) unprotected spring, well or river and 144(46.2%) tape water (**Table 7**).

Table 7: Illustrates the percentage of individuals with personal hygiene and source of water for drinking and bathing for street children in Jimma town, SW Ethiopia, 2019.

Characteristics	Categories	Frequencie (%) s	
Hand washing habit during meal (n= 312)	Yes	191	61.2
	No	121	38.8

Bathing regularly (n= 312)	Yes	282	90.4
	No	30	9.5
Frequency of taking bath (n=282)	Once a week	140	49.6
	Twice a week	35	12.4
	Once a month	90	31.9
	Rarely	17	6.0
Washing clothes regularly (n=312)	Yes	278	89.1
	No	34	10.9
Frequency of washing cloths (n=278)	Once a week	150	54.0
	Twice a month	29	10.4
	Once a month	79	28.4
	After a month	20	7.2
Source of water for bathing and washing cloths	Tape water	144	46.2
	Public stand	28	9.0
	Protected spring/well	12	3.8
	Unprotected spring, well or river	173	55.4
Source of water for drinking (n=312)	Tape water	225	72.1
	Protected Spring/well water	79	25.4
	Unprotected water	5	1.6
	Others	3	0.9

Additionally, 225(72.1%) of the children use tape water for drinking but only 5(1.6%) use unprotected water sources.

5.7 Prevalence of thinness and stunting among street children who were residing in Jimma town, 2019.

Anthropometric data: The mean weight was 39.87(\pm 7.197 SD) ranging from 26.1- 62.3 K.g and the mean height was 151 cm (\pm 7.959 SD) ranging from 130-176cm

The prevalence of thinness, stunting and both thin and stunted was 29.2% [95% C.I: 24%- 34.0%], 30.4% [95% C.I; 24.6% - 35.3%] and 4.2% [2.2% - 6.4%] respectively

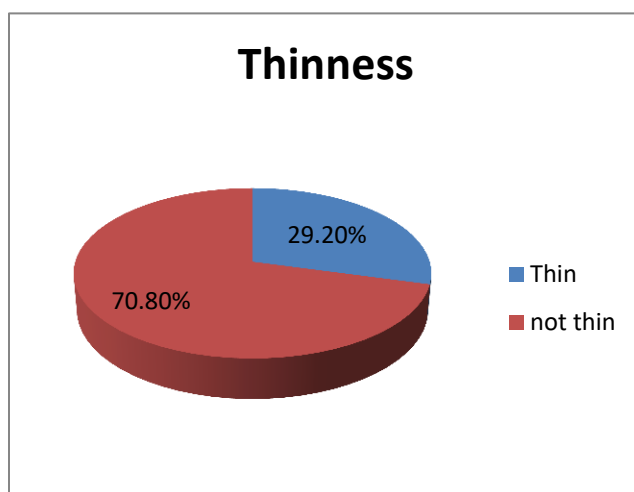


Figure14: Shows prevalence of thinness among street children residing in Jimma town, SW Ethiopia, 2019

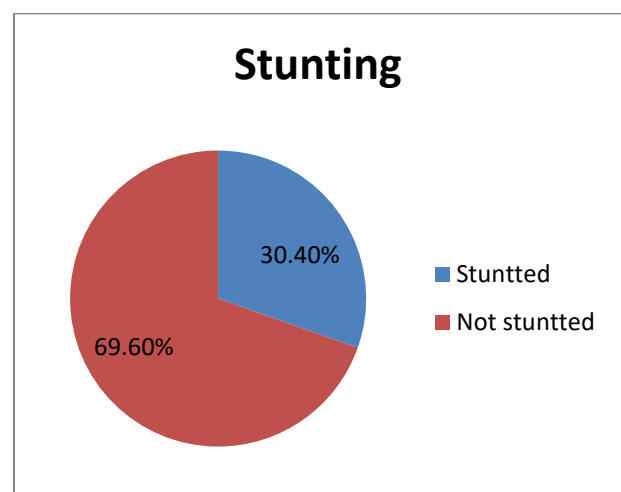


Figure 15: Shows prevalence of Stunting among street children residing in Jimma town, SW Ethiopia, 2019

5.8 Factors associated with thinness and stunting in binary logistic regression among street children residing in Jimma town, southwest Ethiopia

5.8.1 Factors associated with thinness in bivariate binary logistic regression among street children residing in Jimma town, southwest Ethiopia.

Bivariate logistic regression was fitted to identify candidate variables for multivariable logistic regression. Accordingly, a total of ten variables with p-value ≤ 0.25 were candidate for multivariable logistic regression analysis of thinness (**Table 8**).

Table 8: Illustrate results of binary logistic regression of factors associated with thinness among street children residing in Jimma town, SW Ethiopia, 2019.

Variables	Categories	Thinness		COR(95%C.I)	P-value
		Thin	Not thin		
Sex	Male	76	205	1	
	Female	15	16	2.53[1.19- 5.36]	0.016*
Educational status of Father	Didn't attended	54	160	0.56[0.33- 0.93]	0.025*
	Attended school	37	61	1	
Median income	<35 birr	56	106	1.87[1.13-3.09]	0.014 *
	≥ 35 birr	33	114	1	
Unprotected water source for bathing	Yes	61	111	2.00[1.20-3.33]	0.008 *
	No	30	109	1	
Frequency of standard meal/day	One meal	16	27	5.93[2.28-15.39]	<0.001 *
	Two meal	67	114	5.88[2.68-12.91]	<0.001 *
	Three meal	8	80	1	
Ever skipped one or more daily meal	Yes	87	162	7.92[2.78-22.54]	<0.001 *
	No	4	59	1	
DDS	Adequate	56	174	1	
	Inadequate	35	47	2.31[1.36-3.94]	0.002 *
Food security level	Food insecure	79	169	2.03[1.02-4.00]	0.043 *
	Food secure	12	52	1	
Sense of anger, sadness	Yes	75	143	2.56[1.40-4.69]	0.002 *

	No	16	78	1	
Sense of fear, insecurity	Yes	72	139	2.24[1.26-3.98]	0.006 *
	No	19	82	1	

*COR: crude odd ratio, C.I: 95% confidence interval, * sign indicate variables with p-value < 0.25 and candidate for multivariable logistic regression.*

5.10 Multivariable logistic regression analysis for factors associated with thinness [BMA-for age <-2] among street children residing in Jimma town, SW Ethiopia.

The multivariable logistic regressions model was fitted for candidate variables to identify independent predictors of thinness using backward LR method. After controlling for the effects of potentially confounding variables using multivariable logistic regression, sex, ever skipping one or more meal/ day, dietary diversity score (DDS) and using unprotected water source were statistically significant factors associated with thinness among street children (**Table 9**).

As a results, female off street children were 2.5 times more likely to be thin than male off street children [AOR: 2.55, 95% C.I: 1.16- 5.63]. Adolescent off street children who were skipping one or more daily meal were 6.56 times more likely to be thin than those who never skipped their meal [AOR: 6.56, C.I: 2.25- 19.15]. Additionally, street children who were having inadequate dietary diversity in their daily meal a week prior to the study were 1.86 times more likely to be thin than those who were eating diversified meal [AOR: 1.86, C.I: 1.05- 3.27]. Another factor that showed statistically significant association with thinness is utilization of unprotected water sources in that those who were using unprotected water source were 1.78 times more likely to be thin [AOR; 1.78, C.I: 1.03- 3.05] than those who didn't use it.

Table 9: Illustrate results of multivariable logistic regression analysis for factors associated with thinness among street children residing in Jimma town, SW Ethiopia, 2019.

Variable	Categories	Thinness		COR [95% C.I]	AOR[95% C.I]	P-value
		Thin	Not thin			
Sex	Male	76	205	1	1	

	Female	15	16	2.53[1.19- 5.36]	2.55[1.16- 5.63]	0.02*
Ever skipped one or more meal/ day	Yes	87	162	7.92[2.784- 22.538]	6.56[2.25- 19.15]	0.001*
	No	4	59	1	1	
DDS	Adequate	56	174	1	1	
	Inadequate	35	47	2.31[1.36- 3.94]	1.86[1.05- 3.27]	0.032*
Unprotected water source	Yes	61	111	2.00[1.198-3.328]	1.78[1.03- 3.05]	0.037*
	No	30	109	1	1	
Educational status of Father	Didn't attended	54	160	0.56[0.334- 0.928]	0.59[0.34- 1.03]	0.063
	Attended school	37	61	1		

*AOR: Adjusted odd ratio, COR: crude odd ratio, C.I: 95% confidence interval, * sign indicate variables that are statistically significant at P- value < 0.05 in multivariable logistic regression.*

5.11 Factors associated with stunting in bivariate binary logistic regression among adolescent street children residing in Jimma town, southwest Ethiopia.

Bivariate logistic regression was fitted to identify candidate variables for multivariable logistic regression. Accordingly, a total of eleven variables with p-value ≤ 0.25 were candidate for multivariable logistic regression analysis of stunting (**Table 10**).

Table 10: Illustrate results of binary logistic regression of factors associated with stunting among street children residing in Jimma town, SW Ethiopia, 2019.

Variables	Categories	Stunting		COR(95%C.I)	P-value
		Stunted	Not stunted		
Age categories	12-14	33	158	1	
	15-18	62	59	5.03[3.00- 8.44]	<0.001 *
Duration of streetism in years	< 1 year	31	88	1	
	1-3 years	53	113	1.33[0.79- 2.25]	0.284*
	4-6 years	11	16	1.95[0.82- 4.66]	0.132*

Maternal Education	Attended school	51	142	1	
	Never attended	44	75	0.61[0.38- 1.00]	0.05*
Ever used substance	Yes	45	79	1.57[0.97- 2.56]	0.069*
	No	50	138	1	
Current use of substance	Yes	33	63	1.30[0.78- 2.18]	0.316
	No	62	154	1	
Regularly hand washing habit	Yes	69	122	1	
	No	26	95	0.48[0.29- 0.82]	0.007 *
Frequency of taking bath	Once a week	50	90	1.21[0.55- 2.68]	0.634
	Twice a week	11	24	1	
	Once a month	19	71	0.58[0.24- 1.40]	0.228*
	Rarely	4	13	0.67[0.18 – 2.54]	0.557
Use unprotected water source	Yes	48	125	0.75[0.46- 1.22]	0.248*
	No	47	92	1	
Intestinal parasitic infection	Positive	55	153	0.58[0.35- 0.95]	0.030*
	Negative	40	64	1	
High Physical violence	Yes	28	107	0.43[0.26- 0.72]	0.001*
	No	67	110	1	
Low Physical violence	Yes	71	182	0.57[0.32- 1.02]	0.060*
	No	24	35	1	

*COR: crude odd ratio, C.I: 95% confidence interval, * sign indicate variables with p-value < 0.25 and candidate for bivariate logistic regression.*

5.12 Results of multivariable logistic regression for factors associated with stunting among street children residing in Jimma town, SW Ethiopia.

Multivariable logistic regression revealed that age and ever use of substance by the street children were the statistically significant associated factors for stunting (**Table 11**).

As a result, Adolescent off street children who were found in the age group of 15-18 years old were 5.78 times more likely to be stunted [AOR: 5.78, 95%C.I: 3.20- 10.40] than those who were found in age group 12-14 years old. In addition, adolescent off street children who were ever used substance were three times more likely to be stunted [AOR: 3.01, 95%C.I: 1.17-7.77] than those who didn't use substance in their life span. Adolescents off street children who encounter high physical were 0.52 times less likely to develop stunting [AOR: 0.48, 95%C.I: 0.26- 0.87] than those who didn't encounter high physical violence.

Table 11: Illustrate results of multivariable logistic regression analysis for factors associated with thinness among street children residing in Jimma town, SW Ethiopia, 2019

Variables	Categories	Stunting		COR(95%C.I)	AOR(95% C.I)	P-value
		Stunted	Not stunted			
Age categories	12-14	33	158	1	1	
	15-18	62	59	5.03[3.00- 8.44]	5.78[3.20- 10.40]	<0.001 *
Ever use substance	Yes	45	79	1.57[0.97- 2.56]	3.01[1.17- 7.77]	0.023*
	No	50	138	1	1	
Currently use substance	Yes	33	63	1.30[0.78- 2.18]	0.42[0.15- 1.13]	0.085
	No	62	154	1	1	
Maternal Education	Attended school	51	142	1	1	
	Didn't attend	44	75	1.63[1.00- 2.67]	0.61[0.34- 1.00]	0.100
High Physical violence	Yes	28	107	0.43[0.26- 0.72]	0.48[0.26- 0.87]	0.016
	No	67	110	1	1	

AOR: Adjusted odd ratio, COR: crude odd ratio, C.I: 95% confidence interval, * sign indicate variables that are statistically significant at P- value < 0.05 in multivariable logistic regression.

6. Discussion

Problems related to undernutrition have been identified as an important concern of public health in Ethiopia though over nutrition becoming an emerging issue. Many studies have been carried out to identify the extent and consequence of malnutrition in different population groups. But, there is still some segment of populations in which their nutritional problems never yet investigated. Among this, street children demonstrated the vulnerability of those who have not received appropriate attention to ensure whether their nutritional needs are met or not. This study intended to assess the magnitude and form of undernutrition among adolescent street children in Jimma, Ethiopia.

The study recruited adolescent street children whose age ranged from 12 through 18 with median age of 14 (± 2 IQR) years and found that highest proportion (61.2%) were in the age group of 12-14 and majority were male. The educational history of these children had affected because of residing on the street in that 49.7% were attending class from 1-4 and 17.9% from 5-8th class before leaving home but during the study 92.9% were not attending school at all. Almost all street children were involved in income generating activities in daily basis and their daily income ranges 15 to 100 birr with median income of 35 (± 20 IQR) ETH birr. Additionally, 60.1% and 49.5% of children's were from house made mothers and farmer fathers respectively

The study found that the prevalence of thinness [BMI-for-age < -2 SD Z-scores] to be 29.2% from which 12.1% were severely thin [< -3 SD-Z-scores] whereas prevalence of stunting [Height-for-Age < -2 SD z-scores] was found to be 30.4% from which 7.4% were severely stunted [< -3 Z-scores] and also 4.2% were both thin and stunted. Being female, ever skipping one or more daily meal, having inadequate dietary diversity and utilization of unprotected water source were statistically significant factors for thinness whereas being older (age 15 - 18) and ever use of substance were statistically significant factors for stunting.

The prevalence of thinness in this study was lower than the study conducted at Shabagh Area of Dhaka City (30) but nearly similar with the study conducted in south Indian (8) the discrepancy might be due to differences in age group at which the study was conducted (6-18 in Dhaka and 8-18 in south India Vs 12-18 in the current study), variation in the denominator and socio-economic variability. The prevalence of stunting was 30.4% and higher among 15 to 18 years of age which

was lower than study in south India in that it was 48% and higher among under 10 years of age. The difference may be due to age composition, socio-economic characteristics of the studies (8).

Though no single study which discusses undernutrition among adolescent street inhabitant, prevalence of thinness and stunting in current study is higher than previous studies among adolescent girls in the normal population in Ethiopia(54,60–62). And also prevalence of thinness and stunting among adolescents street inhabitant is higher than prevalence of thinness and stunting in school going adolescents of general population (63–66). Moreover, thinness and stunting prevalence among adolescents street children is higher than adolescents from Somali refugee camps(67) and adolescents of pastoralist and Agro-pastoralist communities(68). Generally speaking this group of children (street inhabitants) are highly affected by undernutrition nearly equally or more likely than adolescents in the general population.

In this study, several factors were assessed for statistical association with thinness but being female, having inadequate dietary diversity score, ever skipping meal and utilization of unprotected water source were among the statistically significant associate factors for thinness.

Female street residents were twice more likely to have thinness [AOR: 2.55, C.I: 1.16- 5.63] than male children, which is different from some studies on adolescents in normal population revealing that females are less vulnerable to thinness than male(69–72). The reason behind for the difference may be, females in the street life has limited involvement to income generating activities, low daily income to purchase foods, less competent to fight and scramble foods from common pot. Furthermore, 90%, 68% and 87% of female street inhabitants were skipping one or more daily meal, lived for more than one year in the street and food insecure respectively. So that the cumulative effect of this and other conditions may lead them to thinness.

The street children who were having inadequate dietary diversity in their daily meal a week prior to the study were more likely to be thin [AOR: 1.86, C.I: 1.05- 3.27] than those who were eating diversified meal. This finding is consistent with others finding in that inadequate dietary diversity is a well-established predictor of under nutrition among adolescents in normal population The reason behind is, since adolescence is a stage for high demand for adequate quantity and quality meal, lack of diversified diet in a daily pot results in deficiency of micro and macro nutrients that are essential for body building and well-functioning so that in a long run the body begin to utilize

its stored protein and energy sources. Additionally, since adolescence is a period for rapid growth and development, failure in supplying adequate food for daily body demand would result in loss of weight.

The street children who had ever skipped one or more daily meal were six times more likely to be thin [AOR: 6.56, C.I: 2.25- 19.15] than those children who never skipped their daily meal. This may be due to a cumulative effect of daily deficiency in micro and macro nutrients that are essential for body metabolism and energy supply. Additionally, those who were using unprotected water source were more likely to be thin [AOR; 1.78, C.I: 1.03- 3.05] than those who didn't use it. This is may be due to impure water sources serve as a vehicle for intestinal parasites, and bacteria that would increase risk of infection especially diarrheal disease resulting in depletion of micro nutrients.

Variables like age, educational status of the child and parents, daily income, food insecurity and presence of intestinal parasites do not show statistical association with thinness though showed association in other target populations in the general population(39,73,74).

This study also revealed that age and ever use of substance by the street children were the statistically significant factors of stunting. Being found in the age range of 15-18 was found to be five times more likely to be stunted [AOR: 5.78, C.I: 3.20- 10.40] than age groups 12-14. This finding is different from some studies among adolescents in normal population in that early adolescents are more likely to be stunted than late adolescents(64,66). The reason behind for this can be explained by the fact that stunting measures chronic or prolonged exposure to nutrient deficiencies so that the effect would be seen later in life. The stage of adolescence was the last chance of averting childhood stunting through catch up growth but this street children are still in deficient of daily micro nutrients that would be essential for growth abrupt. So that, stunting is still evident in later life.

In addition, those who were ever used substance were three times more likely to be stunted [AOR: 3.01, C.I: 1.17-7.77] than those who didn't use substance in their life span. This might be due to the fact that these street children had involved in a range of substance utilization that can result in loss of appetite, early satiety, and increased expense for substances than food. Furthermore, the result from this study showed that 58.9% of the children had been chewing khat, 45.2% had been

smoking cigarette, and 51.6% had been using inhalant (mastish glue)) which would results in a lack of proper nutrition, either as a result of not eating enough throughout the day or eating foods that are low in necessary nutrients. Certain substances, such as stimulants like mastish, suppress appetite and disrupt metabolic and neuroendocrine regulation, leading to improper calorie consumption and impaired nutrient processing. Prolonged exposer to such substances will increase depletion of body nutrients so that growth and development is impaired (57).

Factors like current use of substance and maternal education were not associated with stunting but high physical violence was negatively associated with stunting.

❖ **Limitation of the study**

✓ Because of the nature of study design, It is difficult to conclude that this much prevalence of thinness (29.2%) and stunting (30.4%) is due to living as off the street child or not. They might came up to the street while having thinness and stunting.

✓ Recall bias for retrospective inquiry of personal, family history and dietary practice may affect the results of average daily income, frequency of skipping meal and dietary diversity score which may inflate or reduce status so does association with thinness.

✓ Since the study was conducted during fasting time, it may affect results in animal source food consumptions and individual dietary diversity score.

7. Conclusion and Recommendations

Conclusion

In this study group, undernutrition, especially thinness and stunting was found to be high and a range of factors were observed that results in undernutrition. But, being female, ever skipped one or more daily meal, inadequate dietary diversity score and use of unprotected water source were statistically significant strong evidences for thinness and being older (being found in age group of 15 - 18) and ever used substances were a statistically significant associated factor for stunting.

Recommendation

Jimma town Women, children and youth office should give concern for these street children in that these children are having a lot of social, economic, personal and environmental problems that are contributing for undernutrition.

Jimma town Health office should know that a high proportion of street children are having undernutrition especially thinness and stunting so that the office should consider these children in supplementary feeding programs that can provide daily meal.

Jimma town municipality should have a clue that a significant proportion of street children are having health problems because of using unprotected water sources and poor sanitation so that provision of personal sanitation protection facilities like bathing room, toilet and laundry areas are solutions to minimize the problem.

Non-governmental organizations who are working with orphan and vulnerable children or directly with street children should focus on the nutritional aspect and factors that may contribute for malnutrition as whole. Those children who are skipping one or more of their daily meal are more prone to have undernutrition so that daily provision of meal at a center is advised.

Progressive scientific studies should be conducted focusing on why these children leave their home, real challenges they face while working and living on the street, mental and psychological insults they had and so on by the scientific communities adding qualitative approach upon quantitative studies.

FMOH, Ethiopia: Should know that a significant proportion of street children are victims of thinness and stunting. As a result, upcoming Policies and strategies that will be formulated in the country targeting undernutrition should consider nutritional problems of street children. Additionally, non-governmental or aid organizations especially who are with interventional program to malnutrition should be guided/ directed to this target population.

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Annex 1: Participant Information Sheet and Assent Form

My Name is -----. I am working as a data collector for the study being conducted in Jimma town among street children whom working or living on the street of Jimma town and lacks adequate supervision, protection and support from their parents or legal guardian or totally has no family and spent day and night somewhere on the street. The research is conducted by **Derese Bekele** (BSc) who has been studying for his Master's degree at Jimma University, institute of Health, Faculty of Public Health, Epidemiology department. I kindly request you to lend me your attention to explain you about the study and being selected as a study participant.

Purpose of the study: This study will help to know the type and magnitude of undernutrition among those who are involved in “on” or “off” the street life and factors that contribute for the problem. As a result, knowing the type and magnitude of under nutrition helps governmental and non-governmental organizations, policy makers and planners to prepare and act up on it.

Procedure and duration: For this study, you will be asked for different questions that help the researcher to measure your status during your life on the street. The questions broadly targeted to socio demographic, personal and environmental sanitation, nutrition and nutritional support, past history of illness, physical and sexual violence, and Anthropometric measurements. I will use interviewer administered questioner, weight and height measuring device that has no risk for your health in any dimension. Therefore, its expected from you to give me appropriate and real data that you have encountered during your street life. All of your responses and procedures done are completely confidential. The findings of the study are general for the study population and will not reflect anything particularly of individual persons You are kindly requested to answer every question and all the procedures, but you may stop or leave the study at any time you want to and no risk or loss of benefit entitled to this. The total time needed to accomplish the study will be 25 minutes and upon completing the study you will have transportation access to where you came from and 20 ETB as a compensation of time waste.

Contact address: If there are any questions or enquires any time about the study or procedures, please contact principal investigator in this address.

Principal investigator: Derese Bekele (BSc) Phone: 0912367419 or 0929040108

E-mail: derestbekele@gmail.com

Do you agree to participate in the study? (Put your signature below)

Yes _____

No _____

If respondent disagree stop here.

Annex 1. Data collection tool

PART ONE-Socio demographic characteristics of the respondent

Code	Questions	Choices	Remark
A001	Date of Data collection	____/____/____ E.C	
A002	Date of birth DD/MM/YY	____/____/____ E.C	
A003	Age (in years)	_____ years	
A004	Sex	A. Male B. Female	
A005	birth place	A. At Jimma Town B. Outside Jimma Town	
A006	Religion	A) Orthodox B) Catholic C) Protestant D) Muslim E) Other	
A007	Ethnicity	A. Oromo B. Amhara C. Dawuro D. Yem E. Gurage F. Others	
A008	What is your current marital status?	A. Currently married B. Never married C. Divorced D. In relationship	
A009	What is your highest Educational status attained?	A. Never attend school B. Only read and write C. 1 -4 grade D. 5 – 8 grade E. 9 -12 grade	
A010	Are you currently attending the class?	A. Yes B. No	If yes go to A012
A011	If No to Q 8, What is the reason?	A. Due to poverty B. Due to family order C. Due to lack of support D. Due to personal desire	
A012	What is the main reason to become to street inhabitant?	A. Peer pressure B. Death of parent(s) C. Looking for a job D. Due to alcoholic family E. Lack of peace in the family F. Displacement G. Other	

		specify_____	
A013	Duration on the street life? In months	_____Months	
A015	Where do you sleep during the night?	A. On the street B. Small rented house C. Plastic shelter D. Families house E. Others specify	
A016	Which type of the street child is s/he?	A. On the street B. Off the street	Categorized by data collector
A017	Do you work to earn money for yourself?	A. Yes B. No	If no go to B001
A018	What do you do to earn money? [multiple answers are possible]	A. Shoe shining B. Carrying small items C. Delivering messages D. Attending and washing cars. E. Exchange of money for sex F. Begging G. Escorting disables H. Others specify	
A019	On average how many birr do you earn per day?	_____birr	
A020	Hours of daytime work?	A. Half a day B. The whole day	

Part Two: Questions Related to Family History

Code	Questions	Choices	Remarks
B001	Do your natural parents alive?	A. Yes B. No	
B002	If your answer for question B001 is NO which one is dead?	A. Father B. Mother C. Both	
B003	Have you ever met your parents?	A. Yes B. NO	
B004	If Yes to Q B003 , How often do You meet your family?	A. Every Day B. Once a week C. Once a month D. Infrequent	
B005	With whom do you live most of the time?	A. Both parents B. Mother C. Father D. Sister/brother	

		E. Friends/peers. F. Boy / girl friend G. Alone H. Lives on the street I. Others specify _____	
B006	If your answer to Q B005 above is other than G and H, with how many number of family members do you live?	_____ in number	
B007	Where do your parents currently live?	A). At Jimma town B). Outside of Jimma town	
B008	If your mother is alive, What is her educational status?	A. Illiterate B. Read and write C. Primary school only D. Secondary and above	
B008	What is your mother's means of livelihood?	A. House made B. Merchant C. Government employee D. Private employee E. Others	
B009	If your father is alive? What is his educational status?	A. Illiterate B. Read and write C. Primary school only D. Secondary and above	
B010	What is your father's means of livelihood?	A. Daily laborer B. Government employee C. Private employee D. Others	
B011	Who is the head of the house?	A. Father B. Mother C. Relatives	

Part III. Questions related to personal and environmental sanitation

S.No	Questions	Choices	Remarks
29	Do you always wash your hand before and after eating a meal?	A. Yes B. No	
30	Do you regularly take a bath or shower?	A. Yes B. No	
31	If yes to Q 30, How often?	A. Once a week B. Twice a week C. Once a month D. More frequently	
32	Do you wash your cloths frequently?	A. Yes B. No	
33	If Yes to Q 32, How often do you wash	A. Once a week	

	it?	B. Twice a month C. Once a month D. After a month	
34	If yes to Q 32, Who helped you to do so?	A. My mother B. My father C. My relatives D. My friends E. My self	
35	What is your Source of water?	A. Pipe B. public stand C. protected spring /well D. Unprotected well, spring or river	
36	Do you have sufficient day time cloths?	A. Yes B. No	
37	Do you have night time cloths?	A. Yes B. No	
38	If yes to Q 36 and 37, Do you change i frequently?	A. Yes B. No	

Part IV. Questions related to nutrition and nutritional support

S.No	Questions	Choices	Remarks
39	On average how often do you eat standard meal per day?	_____ times per day	
40	If yes to Q.39, How often do you eat?	A. Always B. Always except fasting day C. some times D. Do not eat mostly	
42	How would you get your daily meal?	A. Buying B. Eating left over from hotels C. From drop-in centers D. From home	
43	Have you ever skipped one or more of your meal?	A. Yes B. No	
44	If yes to Q 43, Which meal you frequently skipped?	A. Break fast B. Lunch C. Dinner	
45	Do you frequently fell hunger because of skipping meal?	A. Yes B. No	

46	How would you rate the amount of food you eat once?	A. Satisfactory B. Not satisfactory	
47	With whom you eat your meal?	A. Alone B. Together with other children C. Together with parents	
48	Have you ever received support from organizations?	A. Yes B. No	
49	For how long supported by the Organizations?	_____ months	
50	What type of Support Provided by NGO? (more than one answer is possible)	A. Food and Nutrition B. Health Care C. Economic Strengthening D. Education E. Psychosocial Support F. Legal Protection G. Shelter and Care	

Did you consume any of specific food items from food groups at least once 24 hours prior to this data collection date?

S.N	Food Groups	Local components	Score	code
1	Starchy staples	corn/maize, rice, wheat, sorghum millet or any other grains or foods made from these (e.g bread, noodles, porridge, white potato, or other grain products		
2	Dark green leafy vegetables			
3	Other vitamin A rich fruits and vegetables	carrot, sweet potato, mango apricot, ripe papaya, dried peach and fruit juice		
4	Other fruits and vegetables	tomato, onion, sweet peeper		
5	Organ meat	liver, kidney, heart or other organ meats or blood-based foods		
6	Meat and fish	beef, lamb, goat, chicken, Fresh or dried fish		
7	Eggs	Boiled or fried egg		
8	Legumes, nuts and seeds	beans, peas, lentils, nuts, seeds or foods made from these		
9	Milk and milk products	milk, cheese, yogurt, Butter or other milk products		

For the following questions, please tell me how often in a week did you consume the following food items?

S.N	Food item		Frequency per week			
			Never	1-2 times	3 or more times	
1	Bread (“Furno or wheat”)					
2	Teff (Injera)					
3	Porridge (genfo)	F/m teff				
		F/m wheat				
4	Maize or food made f/m maize					
5	Barely or food made f/m barely					
6	Sorghum/millet or food made f/m it					
7	Wheat (Pasta, macaroni, Rice)					
8	Fruits (Banana, Mango, Avocado Papaya, Orange, "Gishta")					
9	Butter, oil					
10	Milk, Cheese and yogurt					
11	Meat	Beef, Goat, Sheep/lamb				
		Chicken				
		Fish				
12	Fired foods (chips, biscuit, cookies)					
13	Sandwich made from vegetables					
14	Sweet potato					
15	Potato (White)					
16	Carrot					
17	Tomato					
18	Onion					
19	Green leafy vegetable	“Salata”				
		“Habesha gomen”				
		Cabbage (teqel gomen)				
20	“Bullee”	Mixed with meat content				
		Mixed with ‘shro-wet’				
		Mixed with bread & ‘wet’				

The following Four items are targeted to individual experiences of adolescents that used to assess food insecurity. Briefly, adolescents are asked whether in the last three months they face

difficulties in having food (something to eat)			
S.No	Questions	Alternatives	Remarks
1	Have you ever worried about having enough food to eat?.	A. Yes B. No	
2	Have you ever reduced food intake because of shortages of food or money to buy food?	A. Yes B. No	
3	Have you ever had to go without eating because of shortages of food or money to buy food?.	A. Yes B. No	
4	Have you ever had to ask outside the home for food because of shortages of food or money to buy food?	A. Yes B. No	

Part VI. Questions related to past history of illness

1	When was the last time you were sick with any illness?	A. Currently ill B. Within the last 2 weeks C. 2 weeks to 1 month ago D. 1 month to 3 months ago E. More than 3 months ago F. Never sick	
Think about the last time you were sick, did you have any of the following symptoms?			
2	Fever (hot body)	A. Yes B. No	
3	Cough	A. Yes B. No	
4	Difficult or fast breathing	A. Yes B. No	
5	Diarrhea	A. Yes B. No	
6	Vomiting	A. Yes B. No	
7	Unable to eat or drink	A. Yes B. No	
8	Abdominal pain	A. Yes B. No	
9	Genital discharge or ulcer	A. Yes B. No	
10	Have you ever got injured on any part of your body in the past one month?	A. Yes B. No	
11	If Yes to Q 10, What was the reason?	A. Fought with friends B. Falling accident C. Vehicle accident D. Work time Accident E. Others	
12	The last time you were sick or	A. Yes	

	injured did you seek any form of treatment?	B. No	
13	If Yes to Q 12, Where did you get help?	A. Self/family/neighbor B. Traditional healer C. Public health facility D. Private health clinic E. Pharmacy F. Religious healer G. Other specify _____	
14	If No to Q12, What was the reason for not to seek treatment?	A. Not sever illness that warrant health care B. No enough money C. No enough time to seek treatment D. Because of fear of neglect from health provider E. Didn't know where to go for treatment F. Others_____	
15	During your street experience, did you feel any sense of anger, sadness, and hopelessness?	A. Yes B. No	
16	If yes to Q15, what was the reason? It happened due to.....	A. being on the street B. lack of support and care from parents C. hunger, sickness and challenges on the street	
17	During your street experience, did you feel any sense of Anxiety, fear, insecurity, depression or tension?	A. Yes B. No	
18	If Yes to Q17, what was the reason? It happened due to....	A. Attack from older gangs B. Daily robbery by others C. Arrest and attack by police officer D. Due to my illegal act E. Due to excessed drug consumption F. Others	

Part VII. Questions related to Physical and sexual violence

The following questions are intended to ask you about your sexual activity and any violation of rights to or not to have sexual intercourse.

S.no	Questions	Alternatives	Remark
1	Have you ever had sexual intercourse?	A. Yes B. No	
2	How old were you when you had Sexual intercourse for the first time?	_____ years old	
3	Have you been willing when you have the first sexual intercourse?	A. Yes B. No	
4	What was the reason for having sexual intercourse unwillingly (without your consent)?	A. Family pressure/Marital engagement B. Peer pressure C. Threatened D. False promise E. For financial support (money) F. To pass exam G. Made me drunken H. Other(Specify)_	
5	How many sexual partners have you ever experienced until now?	A. One B. Two C. Three D. Four or more	
6	Have you ever been faced with unwelcome touch sexually (e.g. on breasts, genitalia etc.), Verbal jocks, Comments; or made you something that you didn't want to?	A. Yes B. No	
7	Have you ever been forced to have sex that you have escaped?	A. Yes B. No	
8	Have you ever been had Sexual intercourse forcefully or by any means that you didn't want to or against your interest?	A. Yes B. No	
9	Whom forced you for that unwanted sex? (More than one answer applicable)	A. Boyfriend/Girlfriend B. Family member C. Other relative D. Teacher E. Street gangs F. Stranger G. Other (specify)	

The following questions are targeted to ask you about any physical harms and any violence towards your physical integrity while living and working on the street. Does anyone in your working and living environment ever -

10	Push you, shake you or throw something at you?	A. Yes B. No	
11	Hit, beat, spanked with a hand?	A. Yes B. No	
12	Hit, beat or spanked with a belt, stick or other object?	A. Yes B. No	
13	twist your arm, ear or pull your hair?	A. Yes B. No	
14	Hit with a closed fist?	A. Yes B. No	
15	Locked, tied or chained you up	A. Yes B. No	
16	Choked or tried to drown you	A. Yes B. No	
17	Burned, scalded, crushed fingers or hands with intension to harm	A. Yes B. No	
18	Forced to hold a heavy object?	A. Yes B. No	
19	Threaten or attack you with a knife, gun or other weapon?	A. Yes B. No	
20	Washed mouth with soap or pepper	A. Yes B. No	
21	Made you stand/kneel for punishment?	A. Yes B. No	
22	Made to stay outside in the cold or heat?	A. Yes B. No	
23	Put in hot or cold water?	A. Yes B. No	
24	Took food away as punishment?	A. Yes B. No	

Part VIII: Anthropometry measurement			
701	Weight in kg		
702	Height in meter		
703	BMI		

PART ONE-Socio demographic characteristics of the respondent

ከድ	ጥያቄዎች	ምርጫዎች	ማስታወሻ
A001	የመረጃ ስብሰባ ቀን	____/____/____ ዓ.ም	
A002	የትውልድ ቀን / ወወ / ዓዓ ቀን	____/____/____ ዓ.ም	
A003	ዕድሜ (በዓመታት)	_____ ዓመት	
A004	ፆታ	1. ወንድ 2. ሴት	
A005	የትውልድ ቦታ	1. ከተማ 2. ገጠር 3. አላወክም	
A006	ሃይማኖት	1. ኦርቶዶክስ 1. ካቶሊክ 2. ሙስሊም 4. ፕሮቴስታንት 4. ሌላ	
A007	የዘር/ ብህር	1. አሮሞ 2. አማራ 3. ከፊች 4. ዳውሮ 5. ጉራጌ 6. ትግሬ 5. ሌሎች	
A008	አሁን ያለዎት የጋብቻ ሁኔታ የቱ ነው?	E. የፍቅር ግንኙነት ኖሮኝ አያውቅም F. የፍቅ ግንኙነት አለኝ G. አሁን ላይ የተቻረጠ ግንኙነት H. ሌላ-----	
A009	ከፍተኛ የትምህርት ደረጃዎ የቱ ነው?	F. ትምህርት ቤት ፈጽሞ አልገቡም G. ማንበብ እና መጻፍ ብቻ H. 1 -4 ክፍል I. 5 - 8 ክፍል J. 9-12 ክፍል	
A010	በአሁኑ ወቅት ት/ቱን እየተከታተሉ ነው?	2. አዎ 2. አይ	አዎ ከሆነ ወያ A012 ይሂዱ
A011	ለጥያቄ ቁጥር 010 አይ ከሆነ ምክንያቱ ምንድን ነው?	E. ድህነት (በኢኮኖሚ አለመረጋጋት) F. በቤተሰብ ትእዛዝ G. ድጋፍ ማጣት H. በግል ፍላጎት I. ሌላ -----	
A012	መንገድ ላይ ለመኖር ዋናው ምክንያት ምንድን ነው?	H. የእኩዮች ተጽዕኖ I. የወላጅ/ጆች ሞት J. ሥራ ለመፈለግ (በኢኮኖሚ ራስን ለማግዝ) K. ቤት ውስጥ በዝባዥ ከሆነ ድርዳራ ለማምለጥ L. የመኖሪያ ቦታ ለውጥ M. ነጻነት ፍለጋ N. ሌላ -----	
A013	የጎዳና ሕይወት ላይ ቆይታ? በወሮች ውስጥ	_____ ወር	
A015	ሌሊት የት ነው የምትተኛው?	F. በአነስተኛ ኪራይ ቤት/ ሰሌን ቤት G. የፕላስቲክ መጠለያ ውስጥ	

		H. በቤተሰቦች ቤት I. ድልድይ ስር J. በየሆቴሉ በረንዳ ላይ K. ባረጃና በፈራረሱ ህንፃዎች ስር L. በገበያ ቦታዎች M. ሌሎች ይጠቀማሉ	
A016	የትኛው የጎዳና ህፃን አይነት ነው?	C. የጎዳና ላይ D. የመንገድ ላይ	Categorized by date collector
A017	ለራስህ/ የሚሆን ገንዘብ ለማግኘት ትሰራለህ/ ?	1. አዎ 2. አይ	If no go to B001
A018	ገንዘብ ለማግኘት ምን ታደርጋለህ? [ብዙ መልሶች ይቻላል]	I. ሊስትሮ J. አነስተኛ ዕቃዎችን መያዝ/ መሸከም K. መልእክቶችን ማድረስ L. መኪና መጠበቅ እና ማጠብ. M. ወሲብን በገንዘብ መለዋወጥ N. ልመና O. ዓካል ጉዳተኞችን ማጉገዝ P. የጎዳና ላይ ሽያጭ፣ ሱቅ በደረቴ Q. ሌሎች-----	
A019	በአማካይ በቀን ምን ያህል ብር ታገኛለህ ሽ?	_____ ብር	
A020	በቀን ውስጥ ስንት ሰዓት በሥራ ታሳልፋለህ/ሽ?	C. ግማሽ ቀን D. ሙሉ ቀን	

ክፍል ሁለት: ከቤተሰብ ታሪክ ጋር የተያያዙ ጥያቄዎች

Code	Questions	Choices	Remarks
B001	የ የተፈጥሮ ወላጆችህ/ሽ በህይወት አሉ ወይ?	1.አዎ 2. አይ	
B002	ለጥያቄ B001 የእርስዎን መልስ አይ ከሆነ, የትኛው ነው በህይወት የሌለው?	D. አባት E. እናት F. ሁለቱም	
B003	ከወላጆችህ ጋር በቅርብ ተገናኝተህ ታውቃለህ/ሽ?	1. አዎ 2. አይ	If no, go to B005
B004	ለጥያቄ B003 አዎን ካሉ፣ ቤተሰቦችዎን በየስንት ጊዜ ያገኛሉ?	E. በየዕለቱ F. በሳምንት አንድ ጊዜ G. በወር አንድ ጊዜ H. እምብዛም ያልተደጋገመ	
B005	አብዛኛውን ጊዜ ከማን ጋር ነው አብሮ የሚኖሩት ?	J. ሁለቱም ወላጆች K. ከእናቴ ጋር ብቻ L. ከ አባት ጋር ብቻ M. ከእህት / ወንድም N. ከዳደሮች / እኩዮች. O. ከፍቅር ዳደኛ ጋር	

		P. ለብቻ Q. በመንገድ ላይ እኖራለሁ R. ከሌሎች _____	
B006	ከላይ ለ B005 ያለዎት መልስ ከ 6፣7 እና 8 ሌላ ከሆነ የቤተሰብ ብዛት ስንት ነው?	_____ በቁጥር	
B007	አሁን ወላጆችዎ የት ነው የሚኖሩት?	1. በጅማ ከተማ 0. ከጂማ ከተማ ውጪ	
B008	እናትህ/ሽ በህይወት ካሉ የትምህርት ደረጃዎ የቱ ነው?	E. ያልተማሩ F. ማንበብና መጻፍ G. የአንደኛ ደረጃ ትምህርት ብቻ H. ሁለተኛ ደረጃ እና ከዚያ በላይ	
B008	እናትህ/ሽ በህይወት ካሉ መተዳደሪያቸው ምንድን ነው?	F. የቤት እመቤት G. ነጋዴ H. የመንግስት ሰራተኛ I. የግል ሰራተኛ J. በመንገድ ላይ ልመና K. ሌሎች	
B009	አባትህ/ሽ በህይወት ካሉ የትምህርት ደረጃቸው የት ነው?	0. ያልተማሩ 1. ማንበብና መጻፍ ብቻ 2. የአንደኛ ደረጃ ትምህርት ቤት ብቻ 3. ሁለተኛ ደረጃ እና ከዚያ በላይ	
B010	አባትህ/ሽ በህይወት ካሉ መተዳደሪያቸው ምንድን ነው?	E. ጉልበት ሰራተኛ F. የመንግስት ሰራተኛ G. የግል ሰራተኛ H. ገበሬ I. በመንገድ ላይ ልመና J. ሌሎች	
B011	የቤቱ ራስ ማን ነው?	D. አባት E. እናት F. ዘመዶች	

ክፍል III. የግል እና የአካባቢ ንፅህና አጠባበቅ ጋር የተያያዙ ጥያቄዎች

Code	Questions	Choices	Remarks
C001	ሁልጊዜ ምግብ ከመብላትዎ በፊትና ከበሉ በኋላ እጅዎን ይታጠባሉ?	1. አዎ 2. አይ	
C002	በየጊዜው ገላህ/ሽን ትታጠባለህ/ሽ ?	1. አዎ 2. አይ	አይ ካሉ ወደ C004
C003	ለ C002 አዎን ካሉ, በየስንት ጊዜው?	E. 1. በሳምንት አንድ ጊዜ F. 2. በሳምንት ሁለት ጊዜ G. 3. በወር አንድ ጊዜ H. 4. በተደጋጋሚ	

C004	ልብሰቶቻችን በተደጋጋሚ ያጥቧቸዋል?	1. አዎ 2. አይ	አይ ካሉ ወደ C007
C005	ለ C004 አዎ ከሆነ፣ ምን ያህል ጊዜ ትታጠባለህ/ሽ?	E. በሳምንት አንድ ጊዜ F. በወር ሁለት ጊዜ G. በወር አንድ ጊዜ H. ከአንድ ወር በኋላ	
C006	ለ C004 አዎን ካሉ፣ እንዲያደርጉ የሚረዳዎት ማን ነው?	F. የእኔ እናት G. የእኔ አባት H. ዘመዶቼ I. ጓደኞቼ J. እኔ ራሴ	
C007	የእርስዎ የውሃ ምንጭ/ መገኛ የቱ ነው?	E. የቧንቧ ውሃ F. የሕዝብ ቦኖ G. የተጠበቀ የጉድጓድ ውሃ H. ንዕህናው ያልተጠበቀ ጉድጓድ ወይም ወንዝ ውሃ	
C008	በቂ የቀን ልብስ አለዎት?	1. አዎ 2. አይ	
C009	የሌሊት/ የዕንቅልፍ ጊዜ ልብስ አለዎት?	1. አዎ 2. አይ	
C010	ለC008 እና C009 አዎ ከሆነ፣ በተደጋጋሚ ትቀይረዋለህ/ሽ?	1. አዎ 2. አይ	

ክፍል አራት. ከአመጋገብ እና ከአልሚ ምግብ ድጋፍ ጋር የተዛመዱ ጥያቄዎች

Code	Questions	Choices	Remarks
D001	በአማካኝ የቀን መደበኛ ምግብዎን ምን ያህል ጊዜ ነው የሚበሉት?	_____ ጊዜ በቀን	
D002	ብዙውን ጊዜ የዕለት ምግብዎን የሚያገኙት እንዴት ነው?	E. በግዢ F. ከሆቴሎች ትርፍራፊ G. ከችግረኞች ማቆያ H. ከቤት I. ከሌሎች የሚገኝ የምግብ እርዳታ	
D003	አንዱን ወይም ከአንድ በላይ የቀን ምግብዎን ዘለው ያውቃሉ?	1. አዎ 2. አይ	አይ ካሉ ወደ D005
D004	ለ D003 አዎን ካሉ፣ የትኛውን የምግብ ጊዜ ብዙ ጊዜ ይዘላሉ?	D. ቁርስ E. ምሳ F. እራት	
D005	የዕለት ምግብዎን በመዝለል ምክንያት በተደጋጋሚ የረሃብ ስሜት ይሰማዎታል?	1. አዎ 2. አይ	
D006	በቀን የሚበሉትን ምግብ መጠን እንዴት ይገምቱታል?	1. አጥጋቢ/ በቂ ነው 2. አጥጋቢ አይደለም	
D007	በተደጋጋሚ ምግብ ከማን ጋር ነው አብረው የሚበሉት?	1. ለብቻ 2. ከሌሎች ልጆች ጋር 3. ከወላጆች ጋር	

D008	ከድጋፍ ሰጪ ድርጅቶች ድጋፍ አግኝተው ያውቃሉ?	1. አዎ 2. አይ	
D009	ድርጅቶቹ ለምን ያህል ጊዜ ድጋፍ ሰጡዎት?	_____ ወር/ ወራት	
D010	በእርዳታ ሰጪ ድርጅቶች የሚቀርበው ድጋፍ ምን ዓይነት ድጋፍ ነው? (ከአንድ በላይ መልስ ይቻላል)	H. ምግብና አልሚ ምግብ I. የጤና እንክብካቤ J. የኢኮኖሚ ማጠናከሪያ K. ትምህርት L. ስነ-ልቦናዊ ድጋፍ M. ሕጋዊ ጥበቃ N. መጠለያ እና እንክብካቤ	

S.N	Food Groups	Local components	Score	code
1	ጥራጥሬዎች/ ሰብሎች	በቆሎ, ሩዝ, ስንዴ, ማሽላ, ዘንጋዳ ወይም ከእነዚህ የተሰራ ምግብ (ለምሳሌ ዳቦ ፓስታ, ገንፎ, ወይም ሌሎች የእህል ምርቶች የተሰራ ሌላ ማንኛውም ምግቦች		
2	ጥቁር/ደማቅ አረንጓዴ ቅጠላማ አትክልቶች			
3	ሌሎች ሺታሚኖች ብዙ ፍሬዎችና አትክልቶች	ካሮት, ስኳር ድንች, ማንጎ, አፕሪኮም, የበሰለ ፓፓዬ, እና የፍራፍሬ ጫማቂ		
4	ሌሎች ፍራፍሬዎችና አትክልቶች	ቲማቲም, ሽንኩርት, ትኩስ በርበሬ		
5	የስጋ መደብ	ጉበት, ኩላሊት, ልብ ወይም ሌሎች የሰውነት ክፍሎች ወይም ደም-ነክ ምግቦች		
6	ስጋ እና ዓሳ	ጠቦት, ግልገል, ፍየል, ዶሮ, ትኩስ ወይም የደረቁ ዓሳ		
7	እንቁላል	የተጠበሰ ወይም የተቀቀለ እንቁላል		
8	ጥራጥሬዎች, ለውዝ እና ዘር	ባቄላ, አተር, ምስር, ፍሬዎች, ጥራጥሬዎች ወይም ከእነዚህ ምግቦች የተሠሩ		
9	ወተት እና የወተት ምርቶች	ወተት፣ አይብ፣ እርጎ፣ ቅቤ ወይም ሌላ የወተት ምርቶች		

ለሚቀጥሉት ጥያቄዎች እባክዎን ለሚከተሉት የምግብ ንጥሎች በሰዎች ውስጥ ምን ያክል ጊዜ እንደሚጠቀሙ ይገነገሩ?

ከድ	የምግብ ንጥል	በሰዎች ድግግሞሽ		
		በጭራሽ	1-2 ጊዜ	3 ወይም ተጨማሪ ጊዜ

F011	ዳቦ ("Furno ወይም ስንዴ")				
F012	ጤፍ (እንጀራ)				
F013	ገንፎ (genfo)	የጤፍ			
		የስንዴ			
F014	በቆሎ ወይም ከበቆሎ የተሠራ ምግብ				
F015	ገብስ ወይም ከገብስ የተሰራ ምግብ				
F016	ማሽለ ወይም ከማሽለ የተዘጋጀ ምግብ				
F017	ስንዴ (ፓስታ, ማኮሮኒ, ፍዝ)				
F018	ፍራፍሬዎች (ሙዝ, ማንጎ, አቮካዶ, ፓፓያ ብርቱካን, "ጊሽጣ")				
F019	ቅቤ፣ ዘይት				
F020	ወተት፣ አይብ እና እርጎ				
F021	ስጋ	የበሬ፣ ፍየል፣ በግ			
		ዶሮ			
		አሳ			
F022	የተጠበሱ ምግቦች (ጅጥስ, ብስኩት, ኩኪሶች)				
F023	ከአትክልቶች የተሠራ ሳንድዊች				
F024	ስኪር ድንች				
F025	ድንች (ነጭ)				
F026	ካሮት				
F027	ቲማቲም				
F028	ቀይ ሽንኩርት				
F029	አረንጓዴ ቅጠላ ለ አትክልቶች	“ሰላጣ”			
		“የሀበሻ ጎመን”			
		ጥቅል ጎመን			
F030	“ቡሌ”	ከስጋ ይዘት ጋር ተቀላቅል			
		ከሽሮ ወጥ ጋር የተቀላቀለ			
		ከዳቦና ወጥ ጋር የተቀላቀለ			

ከዚህ ቀጥሎ የተዘረዘሩት አራት ነገሮች በግለሰብ ደረጃ የምግብ ዋስትና አለመረጋጋቶችን በጉርምስና ዕድሜ ለያ የሚገኙ ወጣቶችን ለመገምገም የታለመ ነው።

Code	Questions	Alternatives	Remarks
F031	በቂ የእለት ምግብ አላገኝም ብለህ/ሽ ተጨንቀህ/ሽ ታውቃለህ/ቂያለሽ?	1. አዎ 2. አይ	
F032	በምግብ ወይም ምግብ ለመግዛት በማያስችል የገንዘብ እጥረት ምክንያት የእለት ምግብህን/ሽን ቀንሰህ/ሽ ታውቃለህ/ሽ?	1. አዎ 2. አይ	
F033	በምግብ ወይም ምግብ ለመግዛት በማያስችል የገንዘብ እጥረት ምክንያት የእለት ምግብህን/ሽን ሳትበላ/ዩ ውለህ/ ሽ ታውቃለህ/ ሽ?	1. አዎ 2. አይ	

F034	በምግብ ወይም ምግብ ለመግዛት በማያስችል የገንዘብ እጥረት ምክንያት የምግብ እርዳታ ከቤት ውጪ ጠይቀህ/ሽ ታውቃለህ/ሽ?	1. አዎ 2. አይ	
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ክፍል VI. ካለፈው የህመም ታሪክ ጋር የተዛመዱ ጥያቄዎች

H001	ከዚህ በፊት ለመጨረሻ ጊዜ ማንኛውም ህመም የታመሙት መቼ ነበር?	G. በአሁኑ ጊዜ አሞኛል H. በአለፉት 2 ሳምንታት ውስጥ I. ከ 1 ወር በፊት J. ከ 1 ወር እስከ 3 ወር በፊት K. ከ 3 ወራት በፊት L. በጭራሽ ታምሜ አላውቅም	መልስዎ 6 ከሆነ ወይም ክፍል VII
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ከታመሙበት የመጨረሻ ጊዜ አስበው፣ ከሚከተሉት ምልክቶች ውስጥ የትኛው ነበረብዎት?

H002	ትኩሳት (ሞቃት ሰውነት)	1. አዎ 2. አይ	
H003	ሳል	1. አዎ 2. አይ	
H004	አስቸጋሪ ወይም በፍጥነት መተንፈስ	1. አዎ 2. አይ	
H005	ተቅማጥ	1. አዎ 2. አይ	
H006	ማስመለስ	1. አዎ 2. አይ	
H007	መብላት ወይም መጠጣት አለመቻል	1. አዎ 2. አይ	
H008	የሆድ ህመም	1. አዎ 2. አይ	
H009	የዘር ፍረ ፈሳሽ ወይም ቁስለት	1. አዎ 2. አይ	
H010	ባለፈው አንድ ወር ውስጥ በማንኛውም የሰውነትዎ ክፍል ላይ ጉዳት ደርሶብዎት ያውቃል?	1. አዎ 2. አይ	
H011	ለጥያቄ ቁጥር H010 አዎ ከሆነ ምክንያቱ ምንድን ነበር?	F. ከዳደሮች ጋር ተጣልተው G. የመውደቅ አደጋ H. የመኪና አደጋ I. የሥራ ጊዜ አደጋ J. በፖሊስ ተመተው K. ሌላ-----	
H012	ለመጨረሻ ጊዜ ሲታመሙ ወይም አደጋ ሲደርስብዎት ማንኛውንም ዓይነት ህክምና አግኝተዋል?	1. አዎ 2. አይ	አይ ከሆነ ወይም H014 ሂድ
H013	ለጥያቄ ቁጥር H012 አዎ ከሆነ፣ እርዳታ የተደረገልዎት የት ነበር?	H. በራስ / ቤተሰብ / ጎረቤት I. ባህላዊ ፈዋሽ J. የህዝብ ጤና ተቋማት K. የግል የጤና ክሊኒክ L. ፋርማሲ M. ሀይማኖታዊ ፈዋሽ N. ሌላ-----	
H014	ለጥያቄ H012 አይ ከሆነ፣ ምክንያቱ ምን ነበር?	G. የጤና እርዳታ የሚፈልግ ህመም ጉዳት አልነበረም H. በቂ ገንዘብ አልነበረኝም	

		I. ሕክምና ለመፈለግ በቁ ጊዜ አልነበረም J. ከጤና ባለሙያ መገለል ፍራቻ K. ሀክምና ለማግኘት የት እንደሚሄዱ አያውቁም ነበር L. ሌላ-----	
H015	በጎዳና ላይ ቆይታዎ፣ የቁጣ, የሀዘንና የተስፋ መቁረጥ ስሜት ይሰማዎታል?	1. አዎ 2. አይ	
H016	ለጥያቄ H015 አዎ ከሆነ ምክንያቱ ምን ነበር? ይህ የሆነው	D. በመንገድ ላይ በመሆን E. ከወላጆች ድጋፍ እና እንክብካቤ ማጣት F. በረሃብ፣ በሽታዎች እና በመንገድ ላይ ችግሮች G. ሌላ-----	
H017	በመንገድዎ ልምድ ላይ የመረበሽ ስሜት ፍርሃት, በራስ ያለመተማመን ስሜት ይሰማዎታል?	1. አዎ 2. አይ	
H018	ለ ጥያቄ H017 አዎ ከሆነ ምክንያቱ ምን ነበር? የተከሰተው በ ...	G. በትላልቅ የዱርዬዎች ጥቃቶች H. በሌሎች በየዕለቱ መዘረፍ I. በፖሊስ መከንን መያዝና ጥቃት ድብደባ J. በራሴዬ ህገወጥ ድርጊት ምክንያት K. አደንዛዥ እጸን በመውሰድ ምክንያት L. ሌላ-----	

ክፍል VII. ከአካላዊ እና ምታዊ ጥቃቶች ጋር የተያያዙ ጥያቄዎች

የሚከተሉት ጥያቄዎች ስለ ወሲባዊ እንቅስቃሴዎ እና ስለማንኛውም የደንብ መተላለፍም ሆነ የግብረ ስጋ ግንኙነት ላለመፍጠር የታሰቡ ናቸው.

S.no	Questions	Alternatives	Remark
P001	የግብረ ስጋ ግንኙነት ፈጽመህ/ሽ ታውቃለህ/ሽ?	1. አዎ 2. አይ	አይ ከሆነ ወይም P006
P002	ለመጀመሪያ ጊዜ የጾታ ግንኙነት ስትፈጽም ስንት አመትህ/ሽ ነበር?	_____ ዓመት	
ከሂህ በታች የቀረቡት ጥያቄዎች ለሳሴቶች ብቻ የታለሙ ነው:::			
P003	የመጀመሪያ የግብረ ስጋ ግንኙነት ለማድረግ ዝግጁ ነበርሽ?	1. አዎ 2. አይ	አዎ ከሆነ ወይም P006
P004	ያለእርስዎ ስምምነት የግብረ ስጋ ግንኙነት ለማድረግ ምክንያቱ ምን ነበር?	I. የቤተሰብ ጫና ወይም የጋብቻ ተሳትፎ J. የእኩዮች ግፊት K. በማስፈራሪያ/ ዛቻ L. የሃሰት ቃል M. የገንዘብ ድጋፍ ለማግኘት N. ፈተናን ለማለፍ	

		O. በመጠጥ አስክሮኝ P. ሌላ-----	
P005	እስካሁን ድረስ ምን ያህል የወሲብ ዳይጃች አጋጠምዎት/ አልዎት?	E. አንድ F. ሁለት G. ሶስት H. አራት ወይም ከዚያ በላይ	
P006	ከዚህ በፊት ሳይፈልጉ የወሲብ ንክኪ (ለምሳሌ ጡት፣ የመራቢ አካል ላይ); ወይም የቃል አስተያየቶች፣ ዘለፋ ደርሶብዎት ያውቃል?	1. አዎ 2. አይ	
P007	ከዚህ በፊት ያመለጡት ግን በግዳጅ ሊፈሰሱት የነበረ የግብረ ሥጋ ግንኙነት ነበር?	1. አዎ 2. አይ	
P008	በግብረ-ሥጋ ግንኙነት ውስጥ በኃይል ወይም በማይፈልጉት መንገድ ወሲብ አድርገው ያውቃሉ?	1. አዎ 2. አይ	
P009	ይህን ያልተፈለገ የግብረ-ሥጋ ግንኙነት ለማድረግ ማን አስገደድዎት? (ከአንድ በላይ መልስ ይቻላል)	H. የፍቅር ዳይጃ I. የቤተሰብ አባል J. ሌላ ዘመድ K. መምህር L. የጎዳና ወንበዴዎች M. በፊት የማላውቀው N. ሌላ -----	
ቀጥሎ የተዘረዘሩት ጥያቄዎች በተሰማሩበት መንገድ ላይ ሲኖሩና ሲሰሩ የደረሰብዎትን ማንኛውንም አካላዊ ጉዳት እና አካላዊ ተፅእኖ ለመጠየቅ የታለመ ነው። እርስዎ በኑሮ/ስራ ቦታዎ ላይ በማንኛውም ሰው በባለፉት 12 ወራት ውስጥ የሚከተሉት አካላዊ ጉዳቶች ደርሶብዎት ያውቃል?			
P010	መገፋት/መገፍተር፣ መነቅነቅ፣ ወይም የሆነ ነገር መወርወር?	1. አይ 2. አዎ	
P011	በመዳፍ/እጅ መመታት፣መደብደብ?	1. አይ 2. አዎ	
P012	በቀበቶ፣ በትር ወይም ሌላ ነገር በመጠቀም መገረፍ፣ መደብደብ?	1. አይ 2. አዎ	
P013	እጆችዎን መጠምዘዝ፣ጆሮ መቆንጠጥ ወይም ጠጉርዎን ይጎተት?	1. አይ 2. አዎ	
P014	በጡጫ ወይም በባክስ መመታት?	1. አይ 2. አዎ	
P015	ቤት ተቆልፎብዎት፣ በገመድ ወይም ሰንሰለት መታሰር	1. አይ 2. አዎ	
P016	መታነቅ ወይም በውሃ የማስመት ሙከራ	1. አይ 2. አዎ	
P017	ጉዳት ለማድረስ ሆን ተብሎ ሰውነት ላይ ማቃጠል፣ ጥፍር መንቀል መቆረጥ	1. አይ 2. አዎ	
P018	ከባድ የሆኑ ነገሮችን እንዲይዙ ግፊት ማድረግ	1. አይ 2. አዎ	
P019	በጩቤ፣ ጠመንጃ ወይም ሌላ መሳሪያ ማስፈራራት/ ማጥቃት	1. አይ 2. አዎ	
P020	በበርበሬ መታጠን	1. አይ 2. አዎ	
P021	ለቅጣት ሆን ተብሎ መንበርከክ	1. አይ 2. አዎ	
P022	በብርድ ወይም ሙቀቱ ውጭ እንዲቀመጡ መደረግ	1. አይ 2. አዎ	

P023	በሞቃት ወይም ቀዝቃዛ ውሃ ውስጥ መዘፈቅ	1. አይ	2. አዎ	
P024	ሆን ተብሎ/ ለቅጣት ምግብ መቀማት ወይም መከላከል	1. አይ	2. አዎ	

ክፍል VIII; አንትሮጂዮሜትሪ መለኪያዎች				
701	ክብደት በኪግ			
702	ቁመት በሴሜ			
703	BMI			

Annex III. Preliminary assessment format

Name of surveyor_____

Phone N. +251_____

Kebele under survey_____

S.N	Name of the child	Nick name	sex	age	Area of residence	Usual Friends name	Return home night	Place to sleep at night	Duration on/off street	Anatomical deformity	Communication problem
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

Anatomical deformity= deformity to shoulder and limbs that compromise Ht & wt
 Communication problem- unable to speak and/ hear

[Type text]

Annex IV. Shows frequency of food items per seven days

S.N	Food item		Frequency per week		
			Never	1-2 times	3 or more times
1	Bread (“Furno or wheat”)		13(4.2%)	217(69.6%)	82(26.3%)
2	Teff (Injera)		2(0.6%)	182(58.3%)	128(41.0%)
3	Porridge (genfo)		293(93.9%)	18(5.8%)	1(0.3%)
4	Maize or food made f/m maize		183(58.7%)	115(36.9%)	14(4.5%)
5	Barely or food made f/m barely		162(51.9%)	131(42.0%)	19(6.1%)
6	Sorghum/millet or food made f/m it		199(63.8%)	106(34.0%)	7(2.2%)
7	Wheat (Pasta, macaroni, Rice)		41(13.1%)	212(67.9%)	59(18.9%)
8	Fruits		12(3.8%)	197(63.1%)	103(33.0%)
9	Butter		269(86.2%)	35(11.2%)	8(2.6%)
10	Milk, Cheese and yogurt		276(88.5%)	30(9.6%)	6(1.9%)
11	Meat	Beef, Goat, Sheep/lamb	278(89.1%)	26(8.3%)	8(2.6%)
		Chicken	308(98.7%)	3(1%)	1(0.3%)
		Fish	300(96.2%)	9(2.9%)	3(1%)
12	Fired or ripped		115(36.9%)	174(55.8%)	23(7.4%)
13	Fired foods (chips, biscuit, cookies)		77(24.7%)	153(49.0%)	82(26.3%)
14	Sandwich made from vegetables		155(49.7%)	120(38.5%)	37(11.9%)
15	Sweet potato		48(15.4%)	142(45.5%)	122(39.1%)
16	Potato (White)		23(7.4%)	147(47.1%)	142(45.5%)
17	Carrot		102(32.7%)	126(40.4%)	84(26.9)
18	Tomato		111(35.6%)	125(40.1%)	76(24.4%)
19	Onion		107(34.3%)	131(42.0%)	74(23.4%)
20	Cassava		215(68.9%)	86(27.6%)	11(3.5%)
21	Green leafy vegetable	“Salata”	192(61.5%)	98(31.4%)	22(7.1%)
		“Habesha gomen”	79(25.3%)	194(62.2%)	39(12.5%)
		Cabbage (teqel gomen)	110(35.3%)	159(51.0%)	43(13.8%)
22	“Bullee”	Mixed with meat content	168(53.8%)	84(26.9%)	60(19.2%)
		Mixed with shero-wet	56(17.9%)	177(56.7%)	79(25.3%)
		Mixed with shero wet and bread	55(17.6%)	182(58.3%)	75(24.0%)

[Type text]